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**HYDROLOGIC DATA
FOR
EXPERIMENTAL AGRICULTURAL
WATERSHEDS
IN THE UNITED STATES,
1964**

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**Agricultural Research Service
U. S. DEPARTMENT OF AGRICULTURE**

In Cooperation With

State Agricultural Experiment Stations

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**Hydrologic Data
for
Experimental Agricultural Watersheds
in the United States,
1964**

**Compiled by
JAMES B. BURFORD
Soil and Water Conservation Research Division**

Miscellaneous Publication No. 1194

**Agricultural Research Service
U. S. DEPARTMENT OF AGRICULTURE**

**In Cooperation With

State Agricultural Experiment Stations**

Washington, D.C.

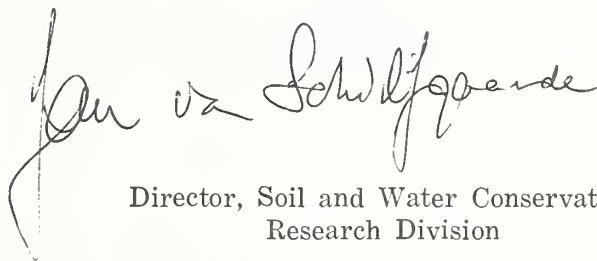
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FOREWORD

This publication presents annual basic data on monthly precipitation and runoff; long-term monthly precipitation means for the locality; annual maximum discharges and volumes of runoff; daily air temperature, precipitation, and discharge (for some areas); and selected runoff events, with associated data on rainfall, land use, and antecedent conditions for agricultural watersheds where research studies were in progress during the calendar year 1964. Its presentation is a continuation of the activity of processing and releasing hydrologic data of general interest gathered cooperatively with other agencies. Throughout the life of the watershed studies, the State agricultural experiment stations have collaborated in the selection, planning, and operation of the research studies. In several cases, the U.S. Geological Survey and State and local agencies, such as State water boards and highway departments or local drainage and conservation districts, have assisted in the work. The classification and correlation of soils and evaluation of other watershed characteristics in the descriptions have been based mostly on field surveys of the Soil Conservation Service.

The data included here are primarily in response to a request by the Soil Conservation Service, but the information will also be useful to other governmental agencies, private engineers, and others concerned with the development and conservation of the Nation's water resources.

A handwritten signature in cursive script, reading "Jan van Schilfopende". The signature is written in dark ink and is positioned above the printed title of the Director.

Director, Soil and Water Conservation
Research Division

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The decimal system of paging is used to index the watershed data. Pages are numbered at the bottom according to location and watershed number, and the data for each watershed are given on one or more pages. For example, page 8.2-2 is location 8 (Vero Beach, Fla.), Watershed 2 (W-2 at Vero Beach), and page 2 of the data for that watershed.

For convenience in finding items listed in tables 2 and 3 and in the "Contents" above, pages are also numbered consecutively at the top.

In table 2, page 14, discontinued watersheds are listed by State, locality, land resource area, number of units, record period, and location number. Table 1, page 14, shows a list of continuing or new watersheds by State, locality, land resource area, assigned location numbers, watershed units, and number of selected runoff events that are reported for 1964 in this publication. Table 3, pages 15 and 16, lists revisions or additions to watershed descriptions or data.

HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1964

This publication presents selected hydrologic data for 171 watersheds for the calendar year 1964. The data include monthly precipitation and runoff summaries for 163 of the watersheds; annual maximum discharges and annual maximum volumes of runoff for 163 of the watersheds for time intervals of 1, 2, 6, and 12 hours and for 1, 2, and 8 days; daily precipitation and discharge or daily air temperature on 58 watersheds, or both; and detailed information for one or more selected typical storm events for 143 watersheds. The decimal page numbering system used (see explanation on page iv) is consistent with that used at the bottom of pages in the seven previous publications (see next section), so that previous published records and general descriptions can be readily found and consulted.

Information on selected storm events includes (1) tabular data for the 30-day antecedent rainfall and runoff before the events, (2) data on rainfall intensities and runoff rates for the event and on accumulated depths of rainfall and runoff, (3) description of watershed conditions at the time of the selected events, (4) plottings of runoff hydrographs and rainfall histograms, (5) watershed maps, and (6) for some of the larger drainage areas, isohyetal maps of storm rainfall distribution.

For newly established watersheds, descriptions of watershed physical characteristics, instrumentation, graphs, maps, land management, and recommended area of application of the results are also given. Original descriptions of characteristics have been revised or updated for several watersheds and are listed in table 3 with details given on the respective data sheets.

PUBLICATIONS OF EARLIER DATA

Hydrologic data for past years on many of the currently operating experimental agricul-

tural watersheds have been previously summarized in three looseleaf publications by the Agricultural Research Service of the U.S. Department of Agriculture, Beltsville, Md. 20705. These reports, listed as references 1, 2, and 3, are described in the following summary. Beginning with the hydrologic data for 1956 through 1963 calendar years, the types of data previously published separately in these three references were combined in U.S. Department of Agriculture Miscellaneous Publications Nos. 945, 994, 1070, and 1164. These are listed below as references 4, 5, 6, and 7. All seven publications have been assigned these reference numbers to simplify citations to them in this and future publications:

Reference 1.—MONTHLY PRECIPITATION AND RUNOFF FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Branch, 691 pp. 1957. (Includes physical descriptions and land use of 334 experimental agricultural watersheds at 60 locations in 27 States for the period 1923 through 1957. Many of these watersheds were discontinued before 1955.)

Reference 2.—ANNUAL MAXIMUM FLOWS FROM SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Division, 330 pp. 1958. (Includes records from 322 watersheds at 59 locations in 27 States for the period 1923 through 1957. Many of these watersheds had been discontinued before 1957.)

Reference 3.—SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. Soil and Water Conservation Research Division, 374 pp. 1960. (Includes a sampling of one to six typical runoff events from 68 watersheds at 40 locations in 25 States for the period 1933 through 1959. The publication presents maps of each watershed, water-

shed conditions for each event—including the 30-day antecedent rainfall and runoff—and tabular as well as graphical data on each storm.)

Reference 4.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956–59. Harold W. Hobbs, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publications No. 945, 672 pp. 1963. (Includes monthly precipitation and runoff from 157 watersheds, including 45 newly established watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 142 watersheds; and one or more typical selected runoff events for 134 watersheds. The publication presents watershed maps, when new or revised, and graphs of each selected event, together with tabular data. Locations of experimental studies are shown on U.S. fold-in map of land resources areas in 48 States.)

Reference 5.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960–61. Harold W. Hobbs and Florence B. Crammatte, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publication No. 994, 496 pp. 1965. (Contains monthly precipitation and runoff from 160 watersheds, including 24 newly established watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 145 watersheds; and one or more typical selected runoff events for 133 watersheds. The publication presents watershed maps, when new or revised, and graphs of each selected event, together with corresponding tabular data. Table 4 gives a listing of selected runoff events published through 1961 for each watershed.)

Reference 6.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962. Harold W. Hobbs, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publication No. 1070, 447 pp. 1968. (Contains monthly precipitation and runoff

from 164 watersheds, including 13 watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 155 watersheds; and one or more typical selected runoff events, presented in both tabular and graphical forms for 136 watersheds. Selected runoff events published through 1962 for each of the watersheds are listed in table 4. Several watershed maps, either new or revised, are presented.)

Reference 7.—HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963. Harold W. Hobbs and J. B. Burford, Soil and Water Conservation Research Division, Agricultural Research Service, USDA Miscellaneous Publication No. 1164, 465 pp. 1970. (Contains monthly precipitation and runoff from 168 watersheds, including nine watersheds for which data had not been previously published; annual maximum discharges and annual maximum volumes for 1 hour to 8 days for 156 watersheds; and one or more typical selected runoff events presented in both tabular and graphical form for 142 watersheds. Selected runoff events published through 1963 for each of the watersheds are summarized in table 4. Several watershed maps, either new or revised, are presented.)

Copies of the foregoing seven publications have been furnished to the Soil Conservation Service and to other governmental agencies—Federal, State, and local. They have also been distributed to State agricultural experiment stations, university libraries and engineering departments, and, when requested, to private engineers and individuals. Distribution has also been made to similar foreign institutions and individuals.

FORM OF DATA PRESENTATION

The data in this volume are presented for each watershed in the following order: (1) watershed description, if not previously published; (2) monthly precipitation and runoff; (3) average monthly precipitation and runoff for period of record; (4) local mean monthly precipitation (previously called normal P in publications through 1961 (Reference 5)); (5) annual maximum flows; (6) daily temper-

ature extremes, daily precipitation, and discharge for some watersheds; (7) tabulations of data for selected runoff events; (8) graphs of selected runoff events; (9) watershed maps, if not previously published or if revised; and (10) isohyetal maps (in some cases) of storm rainfall distribution for selected runoff events.

Continuing Watersheds

For current watersheds, for which the descriptive information has been published in References 1, 4, 5, 6, or 7, the tabular data presentation begins at the top of the first page. Above the border at the center, the numerical page number is given, and the decimal page number is shown at the bottom.

In the space to the right of the first table title, MONTHLY PRECIPITATION AND RUNOFF (inches), the location *name*, watershed *number* (or designation), and watershed *size* are given. In the table, for the current *calendar* year, the *precipitation* (P) in inches is listed in the monthly columns, with the yearly total given in the last column headed *annual*. In the line below, the corresponding *runoff* (Q) in inches is similarly listed for each month and the total for the year. Underneath, in two lines, are given the (P) and (Q) station average amounts (STA AVG) by months, with average annual total for the period of record. On the bottom line of the table are given the long-term monthly and annual precipitation means (averages) for the nearest U.S. Weather Bureau Station.

In the second table, entitled ANNUAL MAXIMUM DISCHARGES IN INCHES PER HOUR AND ANNUAL MAXIMUM VOLUMES OF RUNOFF IN INCHES FOR SELECTED TIME INTERVALS, data are also given for the *calendar* year listed in the first column. Under the *maximum discharge* heading, the date column shows the day and month the instantaneous peak rate in inches per hour occurred. In computing the rate, corrections were made, where needed, for any significant pondage above the runoff measuring device. Under the *maximum volume* heading, the date refers to the day and month on which the interval began; for example, if the interval began on August 30 at 2359, the entry in the date column will be 8-30. The depths for 1

hour to 8 *days* are the annual maximum values recorded, without regard to whole clock hours or days; thus, if the 6-hour interval began at 1332, the interval would end exactly 6 hours later at 1932. The volume given is in inches of average depth over the watershed for each of the seven selected time intervals (1, 2, 6, and 12 hours, and 1, 2, and 8 days). In the last section of the table, the maximum discharges and depths for the various time periods are given under MAXIMUMS FOR PERIOD OF RECORD.

Notes and footnotes in explanation of the data, given below the first two tables, include (1) a general statement as to watershed conditions and other physical changes for the period covered; (2) corrections or revisions for previously reported data; (3) source of long-term precipitation means or averages and years covered; and (4) other pertinent material or explanations of the hydrologic data in the two tables.

Before the 1963 volume, statements of the estimated quality of P and Q records were given in these notes. Beginning with the 1963 volume, no quality statements are given if the records are considered to be *excellent* (accurate within 5 percent). However, if they are judged to be *less* than excellent, such as *good* (within 10 percent), *fair* (within 15 percent), or *poor* (more than 15 percent in error), an accuracy statement is placed ahead of the general statement on watershed conditions. These accuracy statements are given as general footnotes to the daily tables, when presented. Reevaluations of previously published records are underway for several watersheds and explanations of their status are also given in these footnotes.

For some watersheds, tables of DAILY AIR TEMPERATURE (maximum and minimum in degrees Fahrenheit), DAILY PRECIPITATION (inches), and DAILY DISCHARGE (c.f.s.) are given next, with appropriate footnotes in explanation of the data at the end of each table. The multiplier to convert mean daily discharge in cubic feet per second to inches per day is given as first note to the daily discharge table. The conversion factor for daily inches to acre-feet is sometimes given.

If no daily tables are given, the tabular data for SELECTED RUNOFF EVENTS begin in the re-

maining space on the first page and then are carried forward on continuation sheets (or pages) until completed. In general, the *selected runoff events* were those in which runoff was produced by a relatively uniform rainfall excess of short duration. The information for each event includes tabulation of (1) *antecedent* daily rainfall and runoff for 30 days before the event, or reference made to daily tables, if used; (2) rainfall *intensities* and *accumulated amounts* for the event; (3) runoff *rates* and *accumulated amounts* for the event; and (4) specific *watershed conditions* at the time of the event. Simple graphs of the rates of rainfall and runoff are shown for all events on pages following the tabular data.¹ Maps follow the graphs unless previously published in References 3, 4, 5, 6, or 7 or unless shown herein on the map of another watershed. Isohyetal maps, if any, generally follow the regular maps.

In the "Notes" space at the bottom of the first page for runoff events, the multiplier to convert runoff rates in inches per hour to cubic feet per second, or vice versa, is given, followed by references to maps, if required, and explanatory notes or footnotes relating to the tabular data. Below the bottom border and above the first index page number, the cooperating agencies are listed. The notes on continuation pages contain the statement on the multiplier and similar explanations of the data on each page.

New Watersheds

For the eight watersheds installed in recent years that have not been reported previously, the presentation begins with the watershed description in the upper part of the first page. The explanations and definitions upon which the description is based are given in the next section.

The first line, centered at the top of the sheet, gives the *project location*, which is the nearest city or town, and the *number* or *name* of the watershed as used locally. The descriptive material is then given under the 12 major topics listed generally down the left side of

the sheet: *Location, Area, Slopes, Soils, Erosion, Land Capability, Geology, Surface Drainage, Character of Flow, Instrumentation, Watershed Conditions, and Generally Represents.*

After this description, the tabular data are then summarized in the first two tables and notes as previously described for "Continuing Watersheds." The tabular data for daily air temperatures, precipitation, and discharge, if presented, precede the tabular data for SELECTED RUNOFF EVENTS. The rest of the material of the series for the particular watershed follows in the same order as previously indicated.

WATERSHED DESCRIPTIONS

The following definitions and explanations were used in describing watershed location, watershed characteristics, instrumentation, land management, and recommended area of application of the hydrologic data.

LOCATION gives county and State, distance and direction of the runoff gaging station from the nearest city or town, and the major river basin in which it lies. When two or more basins are involved, the tributary or subbasin is given first, followed by the major basin.

AREA of watershed is given in acres if under 640 acres, and in both acres and square miles (in parentheses) if over 1 square mile. If areas are revised, additional values are given with notes on date of change.

SLOPES are given in terms of the ranges commonly used in soil survey work in the locality. The percentages of the watershed lying in each slope class are listed. As an example, "8% is in 0-2% class" means that 8 percent of the watershed area has slopes ranging from 0 to 2 per cent.

SOILS are described briefly, according to definitions from the U.S. Department of Agriculture SOIL SURVEY MANUAL, Agricultural Handbook 18, published in 1951. Soil descriptions were added for 12 and revised for 21 of the continuing watersheds and descriptions were given for six new watersheds.

Soil texture refers to the relative proportions of the various size groups (or separates) of individual soil grains in a mass of soil. Spe-

¹ In some cases, noncritical points were eliminated from original tabulations to reduce the number of lines required in the tables for time, rates, and accumulations.

cifically, it refers to the proportions of clay, silt, and sand below 2 millimeters in diameter. The various classes of texture in order of increasing percentages of the smaller size groups and decreasing percentages of the larger size groups are (1) sands, (2) loamy sands, (3) sandy loams, (4) loam, (5) silt loam, (6) silt, (7) sandy clay loam, (8) clay loam, (9) silty clay loam, (10) sandy clay, (11) silty clay, and (12) clay. In some of the descriptions, the broader classification of coarse, moderately coarse, medium, moderately fine, and fine has been used—the coarse soils are the sands and the fine soils the clays.

Soil structure refers to the aggregation of primary soil particles into compound particles, or clusters of primary particles, that are separated from adjoining aggregates by surfaces of weakness. Structure *grade*, or the durability of the aggregates when subjected to disturbance, is described as *structureless*, *weak*, *moderate*, or *strong*. In some cases, the structureless grade is described as *massive*, if coherent, or *single grain*, if noncoherent. The size of the aggregate is described as *very fine*, *fine*, *medium*, *coarse*, or *very coarse*. Structure *shape* is described as being *platy*, *prismatic*, *columnar*, *angular blocky*, *subangular blocky*, *granular*, or *crumb*.

Permeability is the quality of a soil that enables it to transmit water or air. This quality is described by the terms *very slow*, *slow*, *moderately slow*, *moderate*, *moderately rapid*, *rapid*, or *very rapid*.

Internal soil drainage is the quality of a soil that permits the downward flow of excess water through it. Internal drainage is reflected in the frequency and duration of periods of saturation with water. It is determined by the texture, structure, and other characteristics of the soil profile and of underlying layers and by the height of the water table, either permanent or perched, in relation to the water added to the soil. *Internal drainage* is described as *none*, *very slow*, *slow*, *medium*, *rapid*, or *very rapid*.

Erosion conditions on the watershed are described in accordance with the following classification for water and wind erosion, also briefed from Agriculture Handbook 18. The percent-

age of the watershed in the following erosion classes is given.

Class 1.—The soil has a few rills or places with thin A horizons that give evidence of accelerated erosion, but not to an extent to alter greatly the thickness and character of the A horizon. Except for soils having very thin A horizons (less than 8 inches), the surface soil consists entirely of A horizon throughout nearly all of the delineated areas. Up to about 25 percent of the original A horizon, or original plowed layer in soils with thin A horizons, has been removed from most of the area. This class also includes the areas of no erosion.

Class 2.—The soil has been eroded to the extent that ordinary tillage implements reach through the remaining A horizon or well below the depth of the original plowed layer in soils with thin A horizons. Generally, the plow layer consists of a mixture of the original A horizon and the underlying horizons. Mapped areas of eroded soil usually have patches in which the plow layer consists wholly of the original A horizon, and others in which it consists wholly of underlying horizons. Shallow gullies may be present. Approximately 25 to 75 percent of the original A horizon or surface soil may have been lost from most of the area.

Class 3.—The soil has been eroded to the extent that all or practically all of the original surface soil, or A horizon, has been removed. The plow layer consists essentially of materials from the B or other underlying horizons. Patches in which the plow layer is a mixture of the original A horizon and the B horizon or other underlying horizons may be included within mapped areas. Shallow gullies, or a few deep ones, are common in some soil types. More than about 75 percent of the original surface soil, or A horizon, and commonly part or all of the B horizon, or other underlying horizons, has been lost from most of the area.

Class 4.—The land has been eroded until it has an intricate pattern or moderately deep or deep gullies. Soil profiles have been destroyed except in small areas between the gullies. Such land is not useful for crops in its present condition. Reclamation for crop production or for improved pasture is difficult, but may be practicable if other characteristics of the soil are favorable and erosion can be controlled.

Class +.—Recent alluvial and colluvial deposition.

LAND CAPABILITY is given as classified by Klingebiel and Montgomery in U.S. Department of Agriculture LAND-CAPABILITY CLASSIFICATION, Agriculture Handbook 210, published in 1961. The classification expresses the suitability of land for use without deterioration. The eight land-capability classes are distinguished according to the risk of land damage or difficulty of land use. The following classes I to IV are suitable for cultivation and other uses, whereas classes V to VIII are not suitable for cultivation.

Class I.—Very good land for cultivation; nearly level and productive; not subject to erosion; needs only ordinary good farming methods.

Class II.—Good land for cultivation; mostly gently sloping; not more than moderately subject to erosion; some land may be rather wet; can be farmed safely with easily applied practices.

Class III.—Moderately good land for cultivation; mostly moderately sloping; some areas too wet or too dry; can be farmed safely with practical conservation measures, carefully applied; usually a combination of two or more measures is needed.

Class IV.—Fairly good land, suitable for occasional cultivation; generally strongly sloping; often shallow or very sandy; often found in dry climate.

Class V.—Land very well suited for grazing or forestry; requires good range or woodland management.

Class VI.—Land well suited for grazing or forestry; steeply sloping land, stony or shallow soil, eroded land, droughty land, or wet land; requires careful management.

Class VII.—Land fairly well suited for grazing or forestry; severely limited in use by such factors as very steep slope, shallow or droughty soil, wetness, severe erosion, or excessive salinity; requires very careful management.

Class VIII.—Land not suitable for cultivation, grazing, or forestry; may be useful for wildlife, recreation, or protection of water supplies.

GEOLOGY of the eight new watersheds is described herein, together with that of 12 of the old "Continuing Watersheds." A brief description of the portion of the watershed occupied by various geological formations or series is given, together with strike and dip of the strata, thickness, and relative position, when known. Faults, perched water tables, outcrops, if present, and other details that relate to the movement of water within the drainage area or that affect the hydrology of the watershed are described.

SURFACE DRAINAGE refers to the ease with which excess water flows from the watershed area. The length of principal waterway is the distance from the gaging station to the most remote point on the watershed boundary, measured along the flood plain of the watercourse.

CHARACTER OF FLOW describes the flow of the principal watercourse with respect to permanence and space. The following definitions are from Meinzer's OUTLINE OF GROUND-WATER HYDROLOGY, U.S. Geological Survey Water-Supply Paper 494, published in 1923.

With respect to permanence, streams may be divided into perennial streams, intermittent streams, and ephemeral streams.

A *perennial stream*, or stretch of a stream, is one that flows continuously. Perennial streams are generally fed in part by springs, and their upper surfaces generally stand lower than the water table in the localities through which they flow.

Intermittent streams may be divided, with respect to the source of their water, into spring-fed intermittent streams and surface-fed intermittent streams. They also flow in direct response to precipitation.

A *spring-fed intermittent stream*, or stretch of a stream, is one that flows only at certain times when it receives water from springs. The intermittent character of streams of this type is generally caused by fluctuations of the water table whereby the stream channels stand part of the time below and part of the time above the water table. This is the ordinary type of intermittent stream.

A *surface-fed intermittent stream*, or stretch of a stream, is one that flows during protracted

periods when it receives water from some surface source, generally the gradual and long-continued melting of snow in a mountainous or other cold tributary area. The term may be arbitrarily restricted to streams or stretches of streams that flow continuously during periods of at least 1 month.

An *ephemeral stream*, or stretch of a stream, is one that flows only in direct response to precipitation. It receives no water from springs and no long-continued supply from melting snow or other surface source. Its stream channel is at all times above the water table. The term may be arbitrarily restricted to streams or stretches of streams that do not flow continuously during periods of as much as 1 month.

With respect to continuity in space, streams may be divided into continuous streams and interrupted streams. An *interrupted stream* is one that contains (1) perennial stretches with intervening intermittent or ephemeral stretches or (2) intermittent stretches with intervening ephemeral stretches. These two classes of interrupted streams are designated, respectively, *perennial interrupted streams* and *intermittent interrupted streams*. A *continuous stream* is one that does not have interruptions in space. It may be perennial, intermittent, or ephemeral, but it does not habitually have wet and dry stretches.

INSTRUMENTATION describes type of runoff control or measuring device, number and type of precipitation gages, type of charts used, and snow courses, if employed.

WATERSHED CONDITIONS describes the general use and farm, forest, or range practices before the period of record and the conservation measures, crops, yields, and general cultural operations and practices during the period of record. Rotation crops are listed in the order that they were grown. Operations are described with commonly used agricultural terms, and only those that appear to have a significant relationship to the hydrology of the watershed are mentioned.

GENERALLY REPRESENTS gives the broad area of application for which the data of the specific watershed are recommended. The areas named

are those delineated on the map titled "Location of Experimental Agricultural Watersheds of the Agricultural Research Service," presented on pages 12 and 13. Solid circles show the approximate locations of the "continuing" or "new" watersheds; open circles show approximate locations of studies that have been discontinued. In a few cases, the circles show the locations of the project headquarters instead of the watershed locations. A larger index map, showing more detail, was included in Reference 4.

In some cases, there is an apparent contradiction between the watershed location on the maps and the descriptive information given under "Generally Represents." This is caused by the small scale of the maps; it is difficult to show many small local variations in boundaries of the land resource areas. The descriptive statements, instead of the map location, should be the guide to the application of the data.

STANDARD SYMBOLS FOR TABULAR DATA

The following capital letters have been used as standard symbols throughout this volume to designate specific items or meanings:

- A—precipitation of unknown time of occurrence, amount generally carried forward.
- E—shows that a figure is estimated or partially estimated.
- H—precipitation in the form of hail.
- L—precipitation that is sleet or freezing rain.
- M—mixed precipitation of rain, snow, and sleet.
- N—precipitation in form of rain and snow.
- NR—used in place of a figure to indicate "no record."
- P—designates monthly or annual precipitation in inches.
- Q—designates monthly or annual runoff in inches.
- RG—designates rain gage, generally followed by gage number.
- R—followed by hyphen and a number is recording rain gage.
- S—followed by hyphen and a number is standard rain gage.

S—precipitation in form of snow.

STA AV (or AVG)—designates station average for period of record.

T—denotes a trace, generally less than 0.005 inch of precipitation and 0.01 inch of runoff (or 0.0001 inch of runoff, if four decimal places are used).

Time of day symbols or designations *a*, *p*, *m*, and *n* used in previous publications through 1961 have been dropped and Military Time (0001 to 2400) substituted for 1962 forward. Unless stated otherwise, time used in tables is Eastern, Central, Mountain, or Pacific Standard Time, whichever applies to the given location.

REVISIONS OF PREVIOUSLY PUBLISHED DATA

In some instances, it has been necessary to revise previously published data on specific watersheds. If the corrections involve changed values of monthly precipitation or runoff or annual maximum discharges or maximum volumes for various durations, whole lines for the year are republished with the changed items *underlined*. These revisions are explained in footnotes following the tables in which they appear.

If additions or revisions are made to watershed descriptions, they are placed after the above-mentioned tables. In some cases, a statement on geology has been added to the original descriptions. The geology for the eight new watersheds is described. In several cases, revised map pages have been inserted and labeled—for example: “(1956–59 Map) 37.1–7 (Revision)” —and are placed immediately preceding the current 1964 sheets for the particular watershed. The foregoing changes are listed by States in table 3, page 15.

PERSONNEL RESPONSIBLE FOR COMPILATIONS

At each research location, many individuals have contributed to the planning and establishment of the watersheds and the collection, compilation, and analysis of the data. Some of those who made substantial contributions to the success of the research work behind this report are:

<i>Location</i>	<i>Name or names</i>
8	William H. Speir, John C. Stephens
10	Aurelius P. Barnett
13, 66	James B. Burford, Jan C. Carr, Vernon O. Shanholtz
21, 25	Larry A. Kramer, Keith E. Saxton
26	Lloyd L. Harrold
29, 31, 32	Neal E. Minshall
34, 37	Wendell R. Gwinn, William O. Ree, Francis L. Wimberley
42	Ralph W. Baird, Walter G. Knisel
44	Frank J. Dragoun
45, 47, 63, 64	Donald L. Chery, Orfelio Garcia
62	William A. Champion, Farris E. Dendy, Mary A. Mashall, Robert B. Wilson
65	Clayton Hanson, Armine R. Kuhlman
67	George H. Comer, Martin L. Johnson
68	John M. Clark, Clifton W. Johnson
69	Bill B. Barnes, Donn G. DeCoursey, Monroe A. Hartman

ADDITIONAL PUBLICATIONS BY LOCATION

In References 1, 4, 5, 6, and 7 (see pp. 1 and 2), citations to other publications that presented watershed data and interpretations of results in various journals, bulletins, and periodicals are given at the end of the introductions for many of the locations. Following is a listing, by location number, of additional references to results that were reported through 1964. Several items of general application to the overall program of hydrology that could not be tied to a specific location are included at the end of the listing under General References.

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62. *Oxford, Miss.*
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66. *Moorefield, W. Va.*
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UNITED STATES INDEX MAP AND RELATED DATA

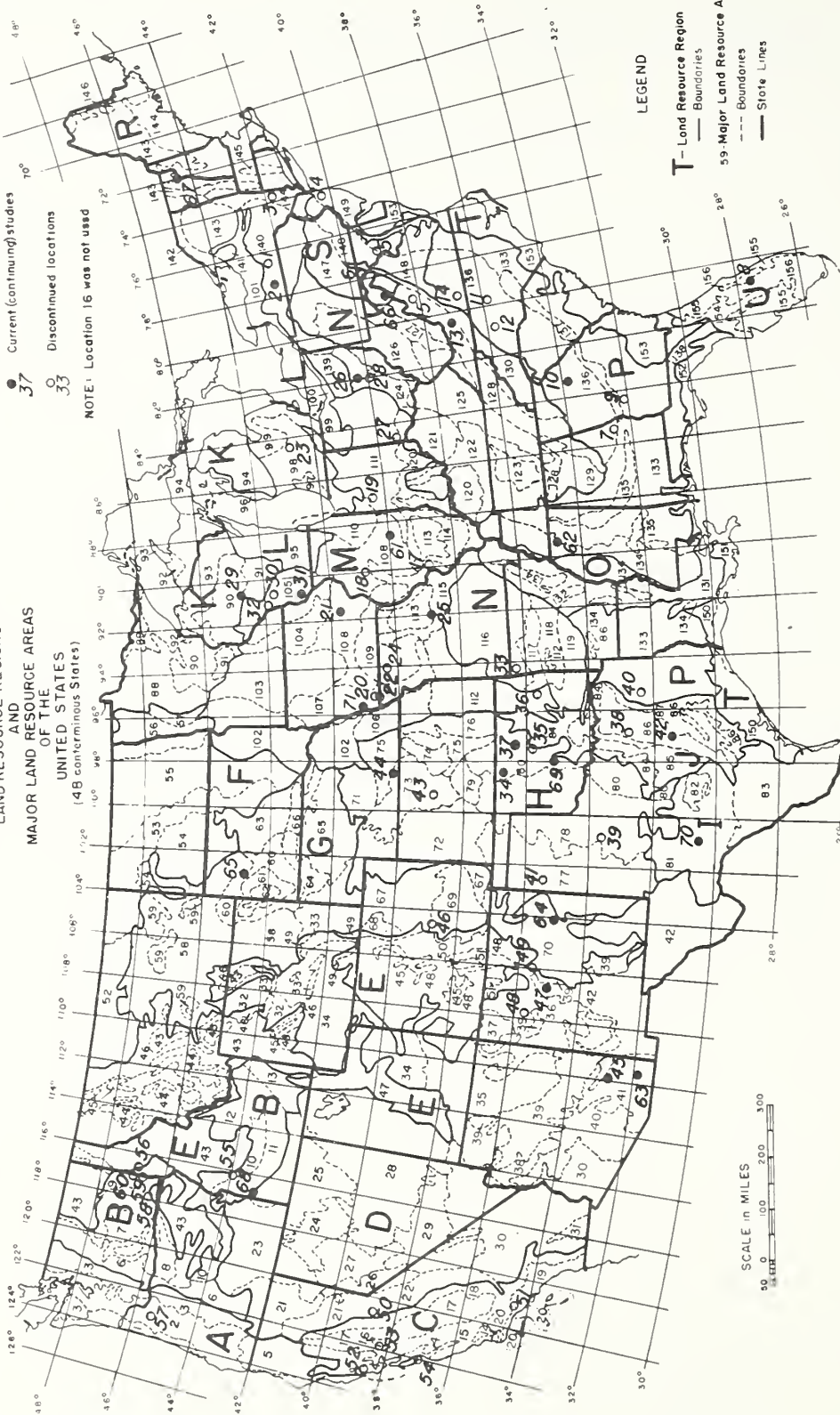
[Pages 12 through 16]

LOCATION OF EXPERIMENTAL AGRICULTURAL WATERSHEDS OF THE AGRICULTURAL RESEARCH SERVICE

KEY TO RESEARCH LOCATIONS
 37 Current (continuing) studies
 33 Discontinued locations

LAND RESOURCE REGIONS
 BY
 AND
 MAJOR LAND RESOURCE AREAS
 OF THE
 UNITED STATES
 (48 conterminous States)

NOTE: Location 16 was not used



SCALE IN MILES
 0 100 200 300
 0 100 200 300
 0 100 200 300

LEGEND

T Land Resource Region
 --- Boundaries
 --- Boundaries
 --- Boundaries
 --- State Lines

Land Resource Area delineations as determined by the Soil Conservation Service

U.S. Department of Agriculture

LEGEND FOR LAND RESOURCE REGIONS AND MAJOR LAND RESOURCE AREAS (of the 48 conterminous States)

- A** NORTHWESTERN FOREST, FORAGE, AND SPECIALTY CROP REGION
- 1 Northern Pacific Coast Range and Valleys
 - 2 Willamette and Puget Sound Valleys
 - 3 Olympic and Western Slope Cascade Mountains
 - 4 California Coastal Redwood Belt
 - 5 Siekyou-Trinity Area

- B** NORTHWESTERN WHEAT AND RANGE REGION
- 6 Eastern Slope Cascade Mountains
 - 7 Columbia Basin
 - 8 Palouse and Nez-Perce Prairies
 - 9 Upper Snake River Lava Plains and Hills
 - 10 Snake River Plains
 - 11 Lost River Valleys and Mountains
 - 12 Eastern Idaho Plateaus
 - 13

- C** CALIFORNIA SUBTROPICAL FRUIT, TRUCK AND SPECIALTY CROP REGION
- 14 Central California Coast Range
 - 15 Central California Valley
 - 16 California Delta
 - 17 Sacramento and San Joaquin Valleys
 - 18 Sierra Nevada Foothills
 - 19 Southern California Coastal Plains
 - 20 Southern California Mountains

- D** WESTERN RANGE AND IRRIGATED REGION
- 21 Klamath and Shasta Valleys and Basins
 - 22 Sierra Nevada Range
 - 23 Malheur High Plateau
 - 24 Humboldt Area
 - 25 Coyote High Plateau
 - 26 California Coast Range and Mountains
 - 27 Fallon-Lovelock Area
 - 28 Great Salt Lake Area
 - 29 Southern Nevada Basin and Range
 - 30 Sonoran Basin and Range
 - 31 Imperial Valley
 - 32 Northern Intermountain Desertic Basins
 - 33 Semiarid Rocky Mountains
 - 34 Central Desertic Basins, Mountains and Plateaus
 - 35 (See E below) Green River Plateaus
 - 36 New Mexico and Arizona Plateaus and Mesas
 - 37 San Juan River Valley Mesas and Plateaus
 - 38 Black, Hualapai, and Cerbat Mountains
 - 39 Arizona and New Mexico Mountains
 - 40 Central Arizona Basin and Range
 - 41 Southeastern Arizona Basin and Range
 - 42 Southern Desertic Basins, Plains and Mountains

- E** ROCKY MOUNTAIN RANGE AND FOREST REGION
- 43 Northern Rocky Mountains
 - 44 Northern Rocky Mountain Valleys
 - 45 Alpine Meadows and Ruckland
 - 46 Northern Rocky Mountain Foothills
 - 47 Wasatch and Uinta Mountains
 - 48 Southern Rocky Mountains
 - 49 Southern Rocky Mountain Foothills
 - 50 San Luis Valley
 - 51 High Intermountain Valleys

- F** NORTHERN GREAT PLAINS SPRING WHEAT REGION
- 52 Brown Glaciated Plain
 - 53 Dark Brown Glaciated Plain
 - 54 Rolling Soft Shale Plain
 - 55 Black Glaciated Plains
 - 56 Red River Valley of the North
 - 57 Western Minnesota Forest-Prairie Transition

- G** WESTERN GREAT PLAINS RANGE AND IRRIGATED REGION
- 58 Northern Rolling High Plains
 - 59 Northern Smooth High Plains
 - 60 Pierre Shale Plains and Badlands
 - 61 Black Hills Foothills
 - 62 Black Hills
 - 63 Rolling Pierre Shale Plains
 - 64 Mixed Sandy and Shale Tableland
 - 65 Dakota-High Plains
 - 66 Dakota-Nebraska Eroded Tableland
 - 67 Central High Plains
 - 68 Irrigated Upper Platte River Valley
 - 69 Upper Arkansas Valley Rolling Plains
 - 70 Pecos-Canadian Plains and Valleys

- H** CENTRAL GREAT PLAINS WINTER WHEAT AND RANGE REGION
- 71 Central Nebraska Loess Hills
 - 72 Central High Tableland
 - 73 Rolling Plains and Breaks
 - 74 Central Hard Sandstone Hills
 - 75 Central Loess Plains
 - 76 Blue-stem Hills
 - 77 Southern High Plains
 - 78 Central Rolling Red Plains
 - 79 Great Bend Sand Plains
 - 80 Central Rolling Red Prairies

- I** SOUTHWESTERN PLATEAUS AND PLAINS, RANGE AND COTTON REGION
- 81 Edwards Plateau
 - 82 Texas Central Basin
 - 83 Rio Grande Plain

- J** SOUTHWESTERN PRAIRIES, COTTON AND FORAGE REGION
- 84 Cross Timbers
 - 85 Grand Prairie
 - 86 Texas Blackland Prairie
 - 87 Texas Claypan Area

- K** NORTHERN LAKE STATES FOREST AND FORAGE REGION
- 88 Northern Minnesota Swamps and Lakes
 - 89 Minnesota Rockland Hills
 - 90 Central Wisconsin and Minnesota Thin Loess and Till
 - 91 Wisconsin and Minnesota Sandy Outwash
 - 92 Superior Plateau
 - 93 Northern Michigan and Wisconsin Stony, Sandy and Rocky Plains and Hills
 - 94 Northern Michigan Sandy Drift

- L** LAKE STATES FRUIT, TRUCK, AND DAIRY REGION
- 95 Southeastern Wisconsin Drift Plain
 - 96 Western Michigan Fruit Belt
 - 97 Southwestern Michigan Fruit and Truck Belt
 - 98 Southern Michigan Drift Plain
 - 99 Erie-Huron Lake Plain
 - 100 Erie-Franklin Rock Area
 - 101 Ontario-Molokah Plain

- M** CENTRAL, FEED GRAINS AND LIVESTOCK REGION
- 102 Loess, Till, and Sandy Prairies
 - 103 Central Iowa and Minnesota Till Prairies
 - 104 Eastern Iowa and Minnesota Till Prairies

- N** EAST AND CENTRAL GENERAL FARMING AND FOREST REGION
- 105 Northern Mississippi Valley Loess Hills
 - 106 Nebraska and Kansas Loess-Drift Hills
 - 107 Iowa and Missouri Deep Loess-Drift Hills
 - 108 Illinois and Indiana Deep Loess-Drift Hills
 - 109 Northern Illinois and Indiana Heavy Till Plain
 - 110 Northern Illinois and Indiana Heavy Till Plain
 - 111 Indiana and Ohio Till Plain
 - 112 Cherokee Prairies
 - 113 Central Claypan Areas
 - 114 Southern Illinois and Indiana Thin Loess and Till Plain
 - 115 Central Mississippi Valley Wooded Slopes

- O** MISSISSIPPI DELTA COTTON AND FEED GRAINS REGION
- 116 (See M Above)
 - 117 Eastern Arkansas Prairies
 - 118 Arkansas Valley and Ridges
 - 119 Ouachita Mountains
 - 120 Kentucky and Indiana Sandstone and Shale Hills and Valleys
 - 121 Kentucky Bluegrass
 - 122 Highland Rim and Pennyroyal
 - 123 Nashville Basin
 - 124 Western Allegheny Plateau
 - 125 Cumberland Plateau and Mountains
 - 126 Eastern Allegheny Plateau and Mountains
 - 127 Eastern Allegheny Plateau and Mountains
 - 128 Southern Appalachian Ridges and Valleys
 - 129 Sand Mountain
 - 130 Blue Ridge

- P** SOUTH ATLANTIC AND GULF SLOPE CASH CROP, FOREST, AND LIVESTOCK REGION
- 131 Southern Mississippi Valley Alluvium
 - 132 Eastern Arkansas Prairies
 - 133 (See P Below)
 - 134 (See P Below)
 - 135 (See J Above)
 - 136 Southern Coastal Plain
 - 137 Southern Mississippi Valley Silty Uplands
 - 138 Alabama and Mississippi Blackland Prairies
 - 139 Southern Piedmont
 - 140 Carolina and Georgia Sandhills
 - 141 North Central Florida Ridge

- R** NORTHEASTERN FORAGE AND FOREST REGION
- 139 Eastern Ohio Till Plain
 - 140 Glaciated Allegheny Plateau and Catskill Mountains
 - 141 Allegheny Plateau
 - 142 Southern New England Champlain Plain
 - 143 Northeastern Mountains
 - 144 New England and Eastern New York Upland
 - 145 Connecticut Valley
 - 146 Aroostook Area

- S** NORTHERN ATLANTIC SLOPE, TRUCK, FRUIT, AND POULTRY REGION
- 147 Northern Appalachian Ridges and Valleys
 - 148 Northern Piedmont
 - 149 Northern Coastal Plain

- T** ATLANTIC AND GULF COAST LOWLANDS, FOREST AND TRUCK CROP REGION
- 150 Gulf Coast Prairies
 - 151 Gulf Coast Marsh
 - 152 Gulf Coast Flatwoods
 - 153 Atlantic Coast Flatwoods

- U** FLORIDA SUBTROPICAL FRUIT, TRUCK CROP AND RANGE REGION
- 154 South Central Florida Ridge
 - 155 Southern Florida Flatwoods
 - 156 Florida Everglades and Associated Areas

Information from SCS, State, and other Offices

TABLE 1.—Experimental agricultural watersheds, listed by States and locations, which were under study during 1964 and are included in this publication

State	Locality	Major land resource area <u>1/</u>	Assigned location No.	Watershed units (number)	Events reported (number)	Pages (inclusive)
Arizona.....	Safford.....	D-41, D-42.....	45	<u>2/</u> 4	5	247-255
	Tombstone.....	D-41.....	63	<u>3/</u> 5	12	313-352
Florida.....	Vero Beach.....	U-155.....	8	4	4	18-29
Georgia.....	Watkinsville....	P-136.....	10	1	2	30-35
Idaho.....	Reynolds Creek..	D-23, D-25.....	68	1	1	394-401
Illinois.....	Monticello ^{4/}	M-108.....	61	---	---	---
Iowa.....	Iowa City.....	M-108.....	21	1	1	89,90
	Treynor.....	M-107.....	71	<u>5/</u> 5	8	437-460
Mississippi....	Oxford.....	P-133, P-134.....	62	16	16	267-312
Missouri.....	McCredie.....	M-113.....	25	1	0	91
Nebraska.....	Hastings.....	H-71, H-73, H-74.....	44	15	12	217-246
New Mexico.....	Albuquerque.....	D-42.....	47	3	6	256-266
	Santa Rosa.....	G-70.....	64	1	1	353-356
New York.....	Cohocton ^{6/}	R-140.....	2	---	---	---
Ohio.....	Coshocton.....	N-124.....	26	34	35	92-144
Oklahoma.....	Cherokee.....	H-80.....	34	6	5	156-166
	Chickasha.....	H-78, H-80, J-84.....	69	<u>7/</u> 17	0	402-436
	Stillwater.....	H-80.....	37	3	2	167-173
South Dakota....	Newell.....	G-58, G-59, G-60.....	65	7	0	357-370
Texas.....	Riesel (Waco)...	J-86.....	42	20	20	174-216
Vermont.....	North Danville..	R-144.....	67	4	4	379-393
Virginia.....	Blacksburg.....	N-128, S-147, N-130, P-136, S-148.....	13	14	14	36-88
West Virginia...	Moorefield.....	N-128, S-147.....	66	4	4	371-378
Wisconsin.....	Colby.....	K-90.....	29	1	1	145,146
	Fennimore.....	M-105.....	31	4	7	147-155

1/ See location map and legend, pages 12 and 13.

2/ Monthly P and Q, STA AV P & Q, and Max. For period of Record for Safford, Ariz., Watersheds I, II, IV, and V withheld pending reevaluation of data - selected events are from reevaluation data.

3/ Includes data on 2 new watersheds: 63.08 and 63.11.

4/ Report deferred on the 2 watersheds.

5/ Includes data on 5 new watersheds.

6/ Report deferred on 1 watershed.

7/ Includes data on 1 new watershed, 500, near Chickasha.

TABLE 2.—Watersheds, listed by States, where observations were discontinued during the 1963 calendar year (For studies discontinued before 1963, see table 1 in previous publication)

State	Locality	Major land resource area <u>1/</u>	Discontinued watershed units		
			Number	Record period	Assigned location and watershed No.
Missouri.....	McCredie.....	M-113.....	1	1951-63.....	25.2
Mississippi.....	Oxford.....	P-133, P-134.....	1	1959-63.....	62.16
Ohio.....	Coshocton.....	N-124.....	1	1938-63.....	26.29
Wisconsin.....	La Crosse.....	M-105.....	1	1937-63.....	32.3
	La Crosse.....	M-105.....	1	1952-63.....	32.4

1/ See location map and legend, pages 12 and 13.

TABLE 3.—List, by States, of additions or revisions made herein to data published prior to 1964

State	Locality	Location page No.	Nature of addition or revision ^{1/}
Arizona	Safford	45.1-1; 45.2-1; 45.3-1; 45.4-1	Watersheds 45.001, 45.002, 45.003, 45.004, and 45.005 were formerly identified as W-I, W-II, W-III, W-IV, and W-V. Monthly P & Q, STA AV, and Max. For Period of Record <u>withheld</u> pending reevaluation. GEOLOGY <u>added</u> for Watersheds 45.002 and 45.004.
		45.1-1	Area reported as 519.3 acres beginning with 1963. Previously reported as 519 in Ref. 6 (1962). Factor to convert discharge in in/hr to cfs was erroneously reported for 1963 as 523.32. Should have been reported as 523.63.
		45.2-1	Area reported as 682.4 acres beginning with 1964. Previously reported as 682 in Ref. 6 (1962).
	Tombstone	63.8-1; 63.11-1	Data <u>added</u> for new W-8 and W-11, beginning in 1963.
Florida	Vero Beach	8.4-1	AREA reported as 3968 acres before 1964.
Iowa	Treyntor	71.1, 2, 3, 4	Data <u>added</u> for new W-1, 2, 3, and 4 beginning in 1964.
		71.5-1	Data <u>added</u> for new W-5, beginning in 1963.
Mississippi	Oxford	62.2-1	Monthly P for April and May and annual averages published in Ref. 5 (1961) <u>revised</u> . Changed values <u>underlined</u> .
		62.3-1	Monthly Q for August (1960), Monthly Q for December (1961), and the annual averages (1960-61) published in Ref. 5 <u>revised</u> . Changed values <u>underlined</u> .
		62.6-1	Monthly P for April and May and annual averages published in Ref. 4 (1958) <u>revised</u> . Changed values <u>underlined</u> .
		62.7-1	Monthly Q for Feb., Mar., Apr., May, and Dec., and annual averages published in Ref. 5 (1961) <u>revised</u> . Changed values <u>underlined</u> .
		62.17-1	Monthly Q for Sept. and annual averages published in Ref. 4 (1958), and monthly P for Apr. and annual averages published in Ref. 5 (1960) <u>revised</u> . Changed values <u>underlined</u> .
		62.18-1	Monthly P for July, August, and September, and annual average published in Ref. 5 (1960) <u>revised</u> . Changed values <u>underlined</u> .
			WATERSHED CONDITIONS <u>revised</u> .
Missouri	McCredie	25.1-1	
New Mexico	Albuquerque	47.1-1	Watershed 47.001 formerly identified as W-I. SLOPES, EROSION, LAND CAPABILITY, and GEOLOGY <u>added</u> and SOILS, and GENERALLY REPRESENTS <u>revised</u> . The drainage area of Watershed 47.001 is in question since 1945 and is larger than reported for 1946-62. Runoff records and selected events previously published for the period should be disregarded until a possible reevaluation can be made and reported.
		47.2-1; 47.3-1	Watersheds 47.002 and 47.003, formerly identified as W-II and W-III. Watershed 47.002, drainage area of 40.1 acres previously reported as 40.5 acres, and 45.003 drainage area of 176 acres previously reported as 168.3 acres. The monthly P & Q, STA AV, and Max. For Period of Record for Watersheds 45.001, 45.002, and 45.003 <u>withheld</u> pending reevaluation.
	Santa Rosa	64.1-1	Watershed 64.001, formerly identified as W-I.
Ohio	Coshocton	26.26-1	Dates and values for Max. For Selected Time Interval for 1939, 1949, 1951, 1955, and 1960 <u>revised</u> for Watershed 172.
		26.30-1	Maximum Volume for Selected Time Interval - date and value for 8 days published in Ref. 4 (1958) <u>revised</u> .
Oklahoma	Stillwater	37.1-7	Topographic map (published in Ref. 4) <u>revised</u> for W-1.
		37.3-6	Topographic map (published in Ref. 4) <u>revised</u> for W-4.
	Chickasha	69.5-1	Data <u>added</u> for one new watershed, 500, beginning in 1964.
South Dakota	Newell	65.2-1,-5-1, -7-1	GENERALLY REPRESENTS <u>revised</u> .
Texas	Riesel	42.2-1,-4-1	SOILS description in Ref. 1 <u>revised</u> .
		42.6-1,-17-1	
		42.24-1,-28-1	
		42.31-1,-34-1	
		42.8-1, 42.10-1	Map reference in Ref. 7 (1963) for Watersheds W-6 and W-10 should read "P. 42.7-5 (revised)" instead of "P. 42.7-3".
		42.11-5	Topography map for Watersheds 42.11;12;13;14;15;16;17; as published in Ref. 5 <u>revised</u> .
Virginia	Blacksburg	13.7-6	Topographic map <u>added</u> .
		13.8-1,-2,-5	<u>Revised</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, and LAND CAPABILITY as presented in Ref. 4 (p. 13.8-1). <u>Added</u> : GEOLOGY and Topography map.

^{1/} References 1, 2, and 3 generally cover years 1924-55; Ref. 4, 1956-59; Ref. 5, 1960-61; Ref. 6, 1962; and Ref. 7, 1963.

TABLE 3.—List, by States, of additons or revisions made herein to data published prior to 1964—Continued

State	Locality	Location page No.	Nature of addition or revision <u>1/</u>
Virginia	Blacksburg (Continued)	13.9-1,-2,-5	<u>Added</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, LAND CAPABILITY, and GEOLOGY, and Topography map.
		13.10-1,-2	<u>Added</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, LAND CAPABILITY, and GEOLOGY.
		13.11-2,-6	<u>Added</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, LAND CAPABILITY, GEOLOGY, and Topography map.
		13.12-1	<u>Added</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, LAND CAPABILITY, and GEOLOGY.
		13.13-1	<u>Added</u> : GEOLOGY statement.
		13.14-1,-2,-3, -4	<u>Added</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, and GEOLOGY.
		13.15-1,-2	<u>Added</u> : WATERSHED DESCRIPTION, including, SLOPES, SOILS, EROSION, LAND CAPABILITY, and GEOLOGY.

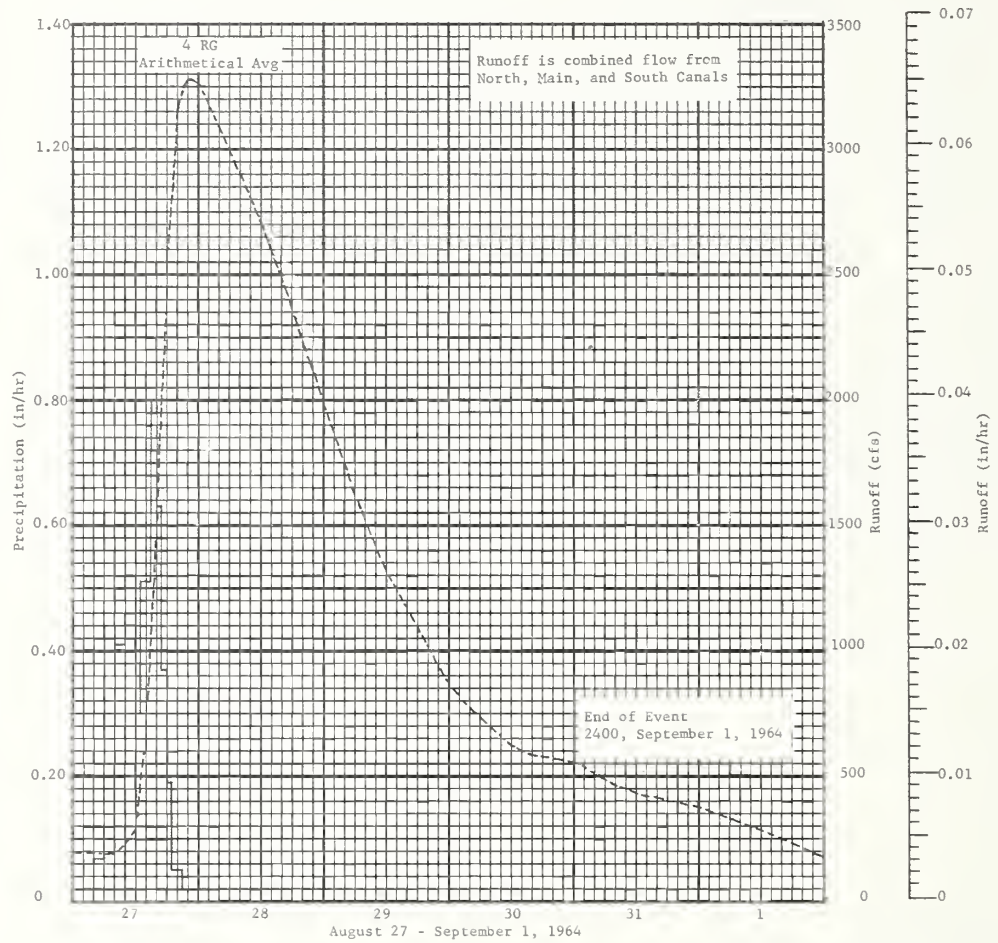
1/ References 1, 2, and 3 generally cover years 1924-55; Ref. 4, 1956-59; Ref. 5, 1960-61; Ref. 6, 1962; and Ref. 7, 1963.

**WATERSHED DATA BY LOCATION NUMBER
AND
DECIMAL PAGING
[8.1-1 TO 71.5-6, A TOTAL OF 443 DATA SHEETS]**

For location by States and Land Resource Areas
and Regions, see U.S. Index Map, page 12.

MONTHLY PRECIPITATION AND RUNOFF ^{1/2/} (inches)							VERO BEACH, FLORIDA (NORTH, MAIN & SOUTH CANALS) WATERSHED W-1 8.1 AREA — 49,915 ACRES (78.0 SQ. MILES)									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P	2.05	4.35	1.04	1.23	3.40	2.20	6.97	10.43	4.74	7.50	1.26	2.83	48.00		
	Q	2.42	2.44	1.45	1.33	1.17	1.24	1.84	5.64	2.63	3.11	1.68	2.09	27.04		
	3/															
STA AV	P	2.18	2.77	3.51	3.73	3.59	5.69	5.56	6.13	8.44	6.21	2.31	1.53	51.65		
(51-64)	Q	1.44	1.32	1.79	1.46	1.27	2.12	1.84	2.10	4.20	4.06	1.70	1.28	24.58		
MEAN P	4/															
64 YR		2.33	2.45	2.99	3.38	4.24	5.81	5.54	5.69	8.03	7.38	2.72	2.10	52.66		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-27	.065	8-27	.065	8-27	.130	8-27	.384	8-27	.739	8-27	1.39	8-27	2.22	8-26	3.38
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO	9-24	.106	9-24	.106	9-24	.211	9-24	.623	9-24	1.23	9-23	2.37	9-23	4.51	9-22	13.31
1964	1963		1963		1963		1963		1963		1963		1960		1960	
NOTES: Watershed conditions: citrus groves, 40%; improved pasture, 35%; unimproved range and forest, 10%; urban development, 15%. 1/ Precipitation Thiessen weighted using 5 gages. 2/ Runoff data furnished by U.S. Geological Survey. Artesian irrigation inflow included in runoff. 3/ Precipitation and runoff records began April 1951. 4/ Mean P based on 64-yr (1901-1964) U.S. Weather Bureau record period at Fort Pierce No. 1, Fla. Missing records for July 1933 and for Feb. 1950 estimated from nearby station.																
1964 DAILY PRECIPITATION (inches)							VERO BEACH, FLORIDA WATERSHED W-1 8.1									
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.83	.00	.21	.00	.00	.23	.24	.00				
2	.00	.00	.00	.00	.28	.07	.82	.00	.06	.82	.00	.00				
3	.00	.28	.00	.04	.00	.87	.15	.00	.03	.00	.01	.00				
4	.00	.70	.00	.00	.00	.21	.26	.00	.00	.00	.01	1.80				
5	.00	1.90	.00	.00	.11	.27	.33	.84	.00	.35	.00	.72				
6	.00	.04	.00	.00	.06	.09	.13	.46	.00	.00	.00	.00				
7	.62	.00	.00	.00	.00	.00	1.57	.01	.35	.01	.00	.00				
8	.00	.30	.00	.00	.00	.00	.00	.20	.00	.07	.00	.00				
9	.00	.00	.01	.00	.00	.00	.00	.07	.43	.00	.00	.00				
10	.00	.00	.00	.00	.00	.00	.04	.31	.43	.00	.00	.00				
11	.51	.00	.00	.00	.00	.00	.20	.48	.14	.69	.00	.02				
12	.41	.00	.00	.00	.00	.00	.00	.00	.10	.47	.00	.03				
13	.10	.00	.00	.00	.23	.00	.00	.31	.78	.01	.00	.00				
14	.00	.00	.00	.00	1.01	.00	.00	.00	.18	.82	.00	.00				
15	.00	.00	.00	.00	.02	.00	.05	.00	.99	.00	.07	.00				
16	.03	.00	.00	.00	.04	.00	.24	.00	.01	.00	.00	.00				
17	.19	.00	.35	.00	.00	.00	1.09	.04	.31	.00	.00	.00				
18	.00	.70	.00	.00	.00	.00	.00	.01	.00	.00	.00	.04				
19	.00	.00	.00	.00	.00	.00	.00	1.13	.03	.00	.02	.00				
20	.02	.00	.00	.00	.00	.00	.00	.34	.26	.00	.02	.00				
21	.00	.00	.00	.02	.00	.00	.00	.51	.05	.00	.00	.00				
22	.00	.07	.00	.00	.19	.01	.06	.05	.00	.00	.00	.00				
23	.02	.00	.00	.00	.00	.03	.58	.05	.00	.00	.01	.00				
24	.00	.00	.00	.00	.00	.00	.01	.00	.00	.04	.17	.00				
25	.00	.00	.00	.00	.00	.05	.28	.01	.00	3.10	.02	.00				
26	.03	.00	.00	.27	.00	.07	.58	.08	.02	.14	.00	.06				
27	.00	.22	.00	.12	.00	.44	.23	5.09	.09	.02	.00	.14				
28	.12	.14	.68	.78	.25	.09	.12	.15	.28	.03	.69	.02				
29	.00	.00	.00	.00	.13	.00	.02	.00	.10	.08	.00	.00				
30	.00	-----	.00	.00	.25	.00	.00	.09	.10	.08	.00	.00				
31	.00	-----	.00	-----	.00	-----	.00	.20	-----	.54	-----	.00				
TOTAL	2.05	4.35	1.04	1.23	3.40	2.20	6.97	10.43	4.74	7.50	1.26	2.83				
STA AV	2.18	2.77	3.51	3.73	3.59	5.69	5.56	6.13	8.44	6.21	2.31	1.53				
NOTES: THIESSEN WEIGHTED RAINFALL USING 5 GAGES. STA AV COVERS PERIOD FROM JULY 1, 1951 THROUGH 1964.																

1964 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (MAIN, NORTH, SOUTH CANALS) WATERSHED W-1 8.1						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	365.0	106.0	89.9	78.8	140.5	100.3	66.5	61.0	276.0	98.0	345.0	151.0
2	175.0	96.0	98.9	45.8	264.9	91.0	74.7	65.7	241.0	215.0	241.0	38.0
3	190.0	90.0	97.6	56.4	159.7	194.0	191.0	53.4	194.0	245.0	195.0	79.0
4	159.0	101.0	97.0	66.3	82.8	246.0	190.0	53.1	181.0	124.0	167.0	310.0
5	126.0	854.0	95.0	77.5	92.0	145.2	123.2	61.4	158.0	50.0	144.0	717.0
6	161.0	842.0	77.0	77.4	75.5	170.4	118.9	277.0	124.0	159.0	130.0	574.0
7	107.0	367.0	57.0	74.7	52.6	117.0	190.5	236.0	98.8	191.0	120.0	255.0
8	262.0	309.0	47.0	58.8	66.6	30.5	517.0	109.4	150.0	100.0	114.0	186.0
9	171.0	218.0	52.0	46.0	72.1	25.5	198.1	199.4	142.0	115.0	105.0	148.0
10	159.0	177.0	81.0	53.8	63.3	48.2	145.4	164.7	189.0	78.0	69.0	127.0
11	157.0	156.0	96.8	124.5	50.5	42.2	103.4	397.0	175.0	111.0	52.0	78.0
12	303.0	141.0	64.8	80.0	47.5	45.2	29.1	437.0	152.0	401.0	97.0	30.6
13	326.0	126.0	51.5	53.8	62.2	47.0	57.4	256.0	231.0	268.0	89.0	39.0
14	100.0	110.0	86.7	125.6	177.0	40.7	72.4	388.0	277.0	204.0	86.0	60.0
15	206.0	111.0	95.0	59.6	170.0	50.9	58.1	385.3	352.0	371.0	73.0	97.8
16	166.0	113.0	97.5	78.9	88.0	46.3	49.5	248.3	600.0	229.0	66.0	102.8
17	198.0	71.0	161.0	99.0	60.5	30.7	140.4	170.9	335.0	168.0	68.0	100.8
18	232.0	43.0	132.0	89.7	46.3	19.2	150.4	132.5	239.0	143.0	67.0	99.6
19	140.0	122.0	107.0	90.2	56.4	19.2	94.0	106.0	181.0	129.0	67.0	73.5
20	138.0	105.9	139.0	129.0	75.3	22.3	71.3	437.0	189.0	106.0	69.0	59.4
21	196.0	56.6	82.0	94.0	55.2	56.5	49.3	236.0	165.0	91.0	69.0	69.3
22	141.0	42.0	31.2	75.0	37.0	54.5	65.0	195.0	150.0	89.0	72.0	78.3
23	104.0	100.9	87.0	41.9	63.4	29.7	100.2	238.0	138.0	93.0	90.0	82.9
24	86.0	185.9	123.0	18.0	71.7	41.6	157.0	239.0	122.0	95.0	104.0	119.9
25	96.0	128.9	87.6	83.5	67.9	93.6	126.0	90.0	82.0	694.0	132.0	119.5
26	92.0	89.9	32.6	57.5	29.9	162.4	127.2	250.0	28.8	870.0	141.0	103.1
27	97.0	82.0	80.3	48.3	30.3	200.7	152.0	1207.0	31.3	387.0	105.0	102.0
28	95.0	84.0	162.0	250.0	33.5	152.2	140.3	2672.0	62.0	214.0	80.0	105.0
29	108.0	83.9	311.0	377.0	48.7	140.8	119.3	1345.0	102.0	177.0	134.0	104.8
30	115.0	-----	141.2	175.0	51.9	104.8	102.6	658.0	147.0	159.0	236.0	91.3
31	113.0	-----	86.0	-----	59.7	-----	69.3	447.0	-----	154.0	-----	82.9
MEAN	164.0	176.3	98.3	92.9	79.1	86.5	124.2	381.1	183.8	210.6	117.6	141.2
INCHES	2.42	2.44	1.45	1.33	1.17	1.24	1.84	5.64	2.63	3.11	1.68	2.09
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0004769. DAILY DISCHARGE IS COMBINED FLOWS OF NORTH, MAIN, AND SOUTH CANALS FROM RECORDS OF U.S. GEOLOGICAL SURVEY. RUNOFF SUBJECT TO CONTROL. RECORDS POOR TO FAIR. ERROR ± 15%.												
1964 SELECTED RUNOFF EVENT						VERO BEACH, FLORIDA (MAIN, NORTH, SOUTH CANALS) WATERSHED W-1 8.1						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Event of August 27-September 1, 1964												
8-27	.00	.00	8-27	4 RG	AVG 1/		8-27	0000	199	.0000		
				0400	.00	.00						
				0600	.07	.14						.0313
				0800	.12	.38						.0510
				1000	.41	1.20						.0698
				1200	.44	2.08						.1978
				1300	.30	2.38						.3117
				1500	.51	3.40						.4395
				1600	.80	4.20						.5695
				1700	.63	4.83					8-28	0400	3097	.8221
1800	.37	5.20	1200	2703	1.283							
8-28			8-28	1900	.19	5.39	8-28	1800	2375	1.586		
				2100	.05	5.49		2400	1993	1.846		
				2400	.02	5.55		0600	1629	2.062		
					.00	5.55		1200	1315	2.238		
								2000	1004	2.422		
								2400	864	2.496		
								0400	768	2.561		
								1200	621	2.671		
								1600	585	2.719		
								2400	555	2.810		
8-30			8-30				8-30	0400	503	2.852		
								0800	459	2.890		
								1200	432	2.926		
								2400	380	2.022		
								0400	285	3.102		
								1200	180	2/ 3.157		
				Watershed conditions: Approximate land use: (from SCS) 40% in citrus and cropland 35% in improved pasture 10% in range and forest 15% miscel. (urban development)								
NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .00001987. FOR MAP OF WATERSHED SEE PAGE 8.1-7 IN SELECTED RUNOFF EVENTS FROM SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960. FOR 30-DAY ANTECEDENT P AND Q SEE TABLE ABOVE AND ON PREVIOUS PAGE. 1/ PRECIPITATION IS ARITHMETICAL AVERAGE OF 4 RG. 2/ END OF EVENT.												



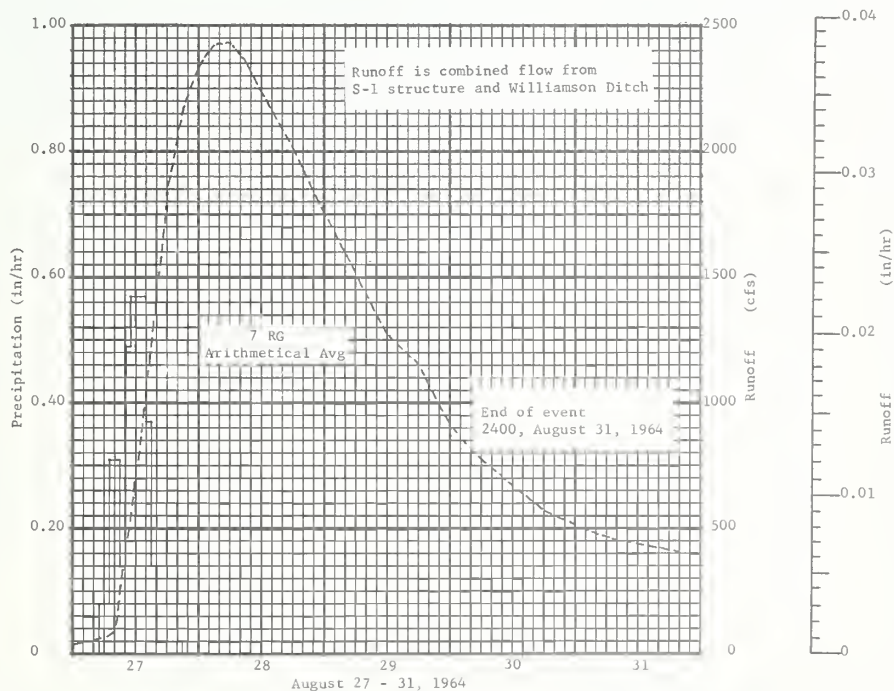
VERO BEACH, FLORIDA WATERSHED W-1

1/ MONTHLY PRECIPITATION AND RUNOFF (inches)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2 AREA — 63,170 ACRES (98.7 SQ. MILES)								8.2										
MONTH		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL										
1964	P	1.68	3.46	.66	3.88	2.54	5.26	5.35	10.10	6.51	2.54	0.88	1.79	44.65										
	Q	.57	.81	.06	.11	.18	.11	.26	2.61	3.94	.27	.07	.14	9.13										
STA AV	3/	1.82	2.41	3.52	2.68	4.69	7.17	5.81	6.39	7.20	3.76	1.32	1.76	48.53										
(55-64)	Q	.46	.54	1.08	.24	.40	1.76	1.63	1.90	3.57	2.19	3.02	.16	16.95										
MEAN P	4/	1.61	1.80	2.72	3.31	3.90	7.07	5.99	6.06	7.15	4.79	1.69	1.51	47.60										
46 YR																								
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																								
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																					
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS									
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME								
1964	8-28	.038	8-28	.038	8-28	.074	8-28	.220	8-27	.420	8-27	.825	8-27	1.44	8-27	2.58								
MAXIMUMS FOR PERIOD OF RECORD																								
19 55 TO	10-16	.11	10-16	.11	10-16	.21	10-16	.62	10-16	1.23	10-16	2.28	10-16	4.16	10-16	8.03								
19 64	1956		1956		1956		1956		1956		1956		1956		1956									
NOTES: Watershed conditions: range and forest, 55%; improved pasture, 34%; citrus, 1%; miscellaneous, 10%. 1/ Precipitation Thiessen weighted using 7 gages. 2/ Runoff data furnished by U. S. Geological Survey. 3/ Precipitation and runoff records began July 1955. 4/ Mean P based on 46-yr (1919-1964) U.S. Weather Bureau record period at Okeechobee Hurricane Gate 6, Fla.																								
1964 DAILY AIR TEMPERATURE (degrees F)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2 8.2																		
OAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	74	50	76	62	65	48	72	43	90	73	93	73	92	74	95	73	92	75	89	72	83	64	75	38
2	65	37	78	47	78	59	77	53	78	70	95	71	89	71	95	73	93	74	89	73	83	61	66	45
3	62	39	72	57	82	68	79	60	90	74	89	73	92	72	89	72	92	75	89	75	70	63	75	63
4	71	54	64	59	88	69	81	64	88	64	93	71	94	73	93	72	92	72	90	77	76	67	82	69
5	73	58	65	62	85	70	79	61	78	65	88	72	95	72	95	72	92	75	90	77	83	63	84	70
6	72	52	77	64	88	50	84	65	84	64	82	69	92	75	95	73	87	74	87	62	82	56	79	63
7	78	66	73	53	79	58	85	67	83	63	87	73	89	74	94	69	90	74	69	60	83	57	72	45
8	71	65	74	50	85	62	87	66	84	60	90	65	89	72	95	72	90	73	80	67	83	56	78	51
9	83	69	58	43	84	61	88	69	85	60	91	68	90	72	90	71	90	71	85	66	82	56	72	53
10	84	68	60	45	85	71	79	63	88	64	93	70	92	72	94	75	82	75	83	64	79	51	74	59
11	65	59	65	44	88	57	84	64	89	65	94	68	92	74	92	75	87	77	80	67	81	58	77	65
12	74	69	75	37	87	66	80	61	89	68	91	71	94	73	90	72	86	75	79	70	81	60	79	58
13	74	50	68	46	86	56	83	65	91	68	92	68	95	75	95	75	82	72	80	70	81	57	81	56
14	59	31	74	56	82	68	87	65	90	68	92	68	94	74	95	72	88	71	83	73	85	65	82	57
15	42	30	79	56	86	70	89	64	82	67	94	65	94	75	93	72	87	73	86	72	79	64	81	48
16	64	49	83	69	88	67	85	64	81	66	94	71	88	72	92	74	85	73	89	63	83	60	72	49
17	69	62	76	50	85	62	84	63	82	67	94	70	87	72	94	76	84	74	78	60	82	56	76	61
18	66	50	76	67	78	49	81	59	88	67	95	70	86	74	95	76	88	73	81	59	84	56	80	57
19	55	43	82	51	79	54	82	60	89	66	97	74	92	75	96	73	88	73	84	58	83	58	80	66
20	71	66	66	42	81	70	84	58	84	69	98	74	92	72	93	71	88	74	84	60	83	68	75	54
21	78	45	62	38	85	64	84	59	85	69	95	73	94	72	92	71	89	74	72	51	85	67	80	56
22	72	54	66	50	82	45	86	62	90	72	94	71	94	73	86	69	89	69	76	55	80	64	80	60
23	79	61	55	41	70	48	90	65	86	70	92	72	90	70	93	75	87	68	78	60	80	64	71	51
24	79	61	60	33	78	58	91	66	85	68	90	69	91	71	94	76	88	67	81	62	81	62	78	49
25	81	62	69	59	80	58	91	69	90	67	86	72	90	74	93	75	91	72	82	66	83	69	78	57
26	81	57	79	50	82	69	90	68	90	64	85	72	88	73	92	75	91	74	76	66	79	61	81	65
27	68	60	71	56	88	64	90	70	88	65	90	71	88	75	92	74	90	77	82	65	77	53	77	64
28	76	62	76	67	80	66	89	72	90	68	93	72	93	77	77	75	89	74	82	70	81	58	77	55
29	64	42	80	43	74	62	84	68	89	68	94	72	91	74	91	75	87	73	76	67	83	64	77	54
30	71	54	---	---	78	48	87	72	91	70	95	74	92	74	92	76	90	73	80	61	78	62	78	53
31	72	60	---	---	70	42	---	---	93	69	---	---	94	72	94	73	---	---	82	63	---	---	77	56
AV.	71	54	71	52	82	60	82	64	87	67	92	71	91	73	92	73	88	73	82	65	81	61	77	56
MEAN	62.5	61.3	61.3	70.8	72.6	76.9	81.3	82.3	82.9	80.8	81.3	82.9	82.3	82.9	80.8	81.3	82.9	82.3	82.9	80.8	81.3	82.9	82.3	82.9
STA AV	74	51	76	53	79	57	83	63	88	69	90	74	91	75	92	75	90	74	86	66	81	61	74	52
NOTES: TEMPERATURE DATA FROM R-3, READINGS TAKEN DAILY. STA AV COVERS PERIOD FROM JULY 1, 1956 THROUGH 1964.																								

1964 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA (TAYLOR CREEK)						WATERSHED W-2	8.2
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.00	.00	1.04	.01	.13	.00	.00	.50	.11	.00	
2	.00	.00	.00	.00	.37	.00	.07	.06	.83	.03	.00	.00	
3	.00	.13	.00	.00	.08	.08	.00	.00	.09	.02	.00	.00	
4	.00	.92	.00	.00	.00	.84	.03	.00	.40	.00	.07	.92	
5	.00	1.43	.00	.47	.00	.11	.04	.25	.08	.39	.00	.46	
6	.00	.14	.00	.00	.00	.20	.08	.12	.00	.00	.00	.00	
7	.82	.00	.00	.00	.00	.00	1.23	.06	.00	.00	.00	.00	
8	.00	.13	.00	.00	.00	.00	.26	.63	.00	.08	.00	.00	
9	.01	.00	.00	.00	.00	.36	.27	.00	.32	.00	.00	.00	
10	.00	.00	.00	.00	.00	1.46	.17	.40	1.42	.00	.00	.00	
11	.09	.00	.00	.00	.00	.00	.00	.18	.32	.33	.00	.00	
12	.35	.00	.00	.00	.00	.00	.00	.00	.28	.34	.00	.00	
13	.02	.00	.00	.00	.25	.00	.01	.35	1.25	.00	.00	.00	
14	.01	.00	.00	.00	.40	.00	.00	.00	.08	.35	.05	.00	
15	.00	.00	.09	.00	.00	.00	.26	.28	.08	.00	.00	.01	
16	.01	.00	.02	.00	.00	.00	.20	.00	.61	.00	.00	.00	
17	.14	.00	.18	.00	.00	.00	.34	.00	.05	.00	.00	.00	
18	.02	.42	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	
19	.00	.00	.00	.00	.00	.00	.00	.77	.00	.00	.00	.00	
20	.02	.00	.00	.00	.00	.00	.00	2.21	.29	.00	.09	.00	
21	.00	.00	.00	.00	.00	.00	.00	.18	.06	.00	.00	.00	
22	.02	.07	.00	.00	.01	.32	.67	.12	.00	.00	.00	.00	
23	.00	.00	.00	.00	.24	.24	.37	.03	.00	.00	.28	.00	
24	.00	.00	.00	1.51	.00	.05	.13	.00	.00	.00	.00	.00	
25	.00	.00	.00	.61	.00	.70	.89	.00	.00	.23	.09	.00	
26	.00	.00	.00	.54	.00	.00	.03	.05	.06	.05	.00	.21	
27	.00	.07	.00	.42	.00	.00	.00	3.87	.03	.00	.00	.19	
28	.17	.15	.37	.32	.00	.00	.02	.06	.07	.20	.19	.00	
29	.00	.00	.00	.01	.13	.00	.08	.00	.05	.00	.00	.00	
30	.00	-----	.00	.00	.00	.89	.04	.14	.14	.00	.00	.00	
31	.00	-----	.00	-----	.02	-----	.03	.21	-----	.02	-----	.00	
TOTAL	1.68	3.46	.66	3.88	2.54	5.26	5.35	10.10	6.51	2.54	.88	1.79	
STA AV	1.82	2.41	3.52	2.68	4.69	7.17	5.81	6.39	6.90	3.76	1.32	1.76	
NOTES: THIESSEN WEIGHTED RAINFALL - USING 7 GAGES. STA AV BASED ON PERIOD JULY 1, 1955 THROUGH 1964.													
1964 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (TAYLOR CREEK)						WATERSHED W-2	8.2
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	65.0	19.0	5.0	5.3	31.0	6.1	20.0	15.0	470.0	38.0	5.8	5.4	
2	76.0	18.0	4.0	5.1	34.0	6.4	16.0	13.0	327.0	41.0	7.6	5.1	
3	78.0	18.0	3.0	6.0	61.0	7.0	13.0	11.0	540.0	41.0	7.6	5.1	
4	78.0	19.0	2.3	6.4	47.0	7.0	8.4	9.5	405.0	38.0	11.0	5.4	
5	78.0	212.0	1.6	7.7	37.0	7.0	6.8	8.6	381.0	25.0	9.1	16.0	
6	78.0	240.0	2.8	9.3	25.0	7.0	6.4	8.8	336.0	40.0	8.5	37.0	
7	77.0	240.0	4.2	8.1	23.0	7.0	4.8	7.9	236.0	42.0	8.2	30.0	
8	76.0	225.0	6.0	8.2	23.0	7.0	13.0	8.6	154.0	23.0	6.4	25.0	
9	74.0	210.0	8.8	8.3	20.0	7.0	27.0	8.8	149.0	19.0	6.4	20.0	
10	70.0	190.0	7.2	8.3	16.0	7.0	35.0	8.4	496.0	25.0	4.2	16.0	
11	65.0	173.0	14.0	8.1	13.0	14.0	40.0	10.0	707.0	17.0	4.2	15.0	
12	60.0	120.0	6.4	7.7	11.0	32.0	34.0	13.0	597.0	24.0	4.2	14.0	
13	56.0	90.0	5.9	7.3	9.2	22.0	29.0	17.0	1020.0	45.0	4.2	12.0	
14	52.0	70.0	5.3	7.8	9.0	15.0	24.0	16.0	1010.0	53.0	4.2	12.0	
15	49.0	55.0	4.8	8.2	9.4	12.0	24.0	18.0	589.0	46.0	4.6	10.0	
16	46.0	45.0	4.3	8.7	10.0	10.0	24.0	17.0	479.0	31.0	8.2	8.9	
17	44.0	37.0	4.1	6.5	11.0	8.6	23.0	22.0	583.0	27.0	5.7	8.6	
18	41.0	31.0	4.7	6.6	10.0	7.9	22.0	15.0	398.0	19.0	4.7	8.6	
19	38.0	27.0	5.1	6.6	9.2	7.3	19.0	13.0	271.0	15.0	4.5	7.9	
20	36.0	23.0	5.4	6.9	8.6	6.8	17.0	41.0	232.0	11.0	4.7	7.6	
21	34.0	20.0	4.8	6.7	8.1	6.5	16.0	296.0	212.0	13.0	4.7	7.6	
22	32.0	17.0	5.6	6.8	7.6	6.2	14.0	242.0	172.0	8.3	4.1	8.0	
23	30.0	15.0	6.2	6.5	7.3	6.2	16.0	196.0	144.0	9.8	4.5	7.1	
24	28.0	13.0	6.4	6.7	7.0	7.0	14.0	168.0	120.0	5.8	5.1	7.6	
25	27.0	12.0	6.2	7.3	6.7	7.7	20.0	122.0	94.0	9.1	5.1	7.1	
26	25.0	11.0	6.1	7.3	6.5	9.5	54.0	91.0	84.0	9.4	5.4	7.6	
27	24.0	9.2	6.2	16.0	6.3	11.0	49.0	760.0	75.0	9.8	5.1	8.6	
28	23.0	8.0	6.2	23.0	6.1	10.0	36.0	2210.0	68.0	11.0	4.7	10.0	
29	22.0	7.0	6.0	29.0	6.0	8.0	30.0	1330.0	62.0	12.0	5.1	9.5	
30	21.0	-----	6.0	31.0	6.0	6.3	23.0	712.0	61.0	8.0	5.7	8.6	
31	20.0	-----	5.5	-----	5.9	-----	18.0	513	-----	7.6	-----	7.6	
MEAN	49.1	75.0	5.49	9.58	15.8	9.42	22.5	223.3	349.0	23.3	5.78	11.6	
INCHES	.57	.82	.06	.11	.18	.11	.26	2.61	3.95	.27	.07	.44	
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0003768. RUNOFF DATA FURNISHED BY THE U.S. GEOLOGICAL SURVEY. DISCHARGE BASED ON COMBINED RECORDS OF TAYLOR CREEK ABOVE STRUCTURE S-1, AND WILLIAMSON DITCH ABOVE S-7 MAR. 9 TO MAY 7, JUNE 25 TO SEPT. 30. RECORDS ARE POOR AND MAY BE IN ERROR BY 15% OR MORE. DISCHARGE MEASUREMENTS GENERALLY MADE ONCE A WEEK.													

1964			SELECTED RUNOFF EVENT			VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-2			8.2		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF 1/				
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of August 27-31, 1964											
8-27	.00	.00	8-27	7 RG	AVG 2/		8-27				
				0500	.00	.00		0000	42	.0000	
				0700	.08	.24		0700	80	.0070	
				0900	.31	.86		1200	720	.0385	
				1000	.14	1.00		1800	1840	.1591	
				1100	.49	1.49		2100	2160	.2533	
				1400	.57	3.20		2400	2340	.3592	
				1500	.37	3.57		8-28	0300	2415	.4711
				1600	.14	3.71			0600	2440	.5854
				2100	.02	3.81			0900	2360	.6985
			1200	2240	.8069						
Watershed conditions: Approximate land use: (from SCS) 34% in improved pasture 1% in citrus 55% in range and forest 10% in miscellaneous							1800	2020	1.007		
			2400	1760	1.185						
8-29							1200	1280	1.472		
							1800	1160	1.587		
							2400	915	1.685		
	8-30						0600	780	1.765		
							1800	580	1.893		
8-31							0600	470	1.992		
							2400	400	3/ 2.114		

NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .00001570. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 8.2-4. FOR ANTECEDENT P AND Q SEE TABLES ON PREVIOUS PAGES. 1/ RUNOFF IS COMBINED FLOW FROM S-1 STRUCTURE AND WILLIAMSON DITCH. 2/ PRECIPITATION IS ARITHMETICAL AVERAGE OF 7 RG. 3/ END OF EVENT.



VERO BEACH, FLORIDA WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF ^{1/2/} (inches)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-3 AREA — 10,050 ACRES (15.7 SQ. MILES)								8.3		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P	1.70	3.35	1.08	3.07	3.77	5.43	4.24	11.65	6.27	2.43	0.54	2.63	46.16		
	Q	.56	1.06	.01	.03	.11	.06	.12	3.36	4.75	.32	.06	.15	10.59		
STA AV ^{3/} (55-64)	P	1.82	2.21	3.66	3.25	4.88	6.74	6.10	6.36	6.80	3.92	1.18	1.68	48.60		
	Q	.40	.30	1.08	.22	.32	1.12	1.22	1.66	3.61	1.97	.12	.10	12.12		
MEAN P ^{4/} 46 YR		1.61	1.80	2.72	3.31	3.90	7.07	5.99	6.06	7.15	4.79	1.69	1.51	47.60		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-27	.064	8-27	.064	8-27	.126	8-27	.372	8-27	.720	8-27	1.27	8-27	1.99	8-27	3.53
MAXIMUMS FOR PERIOD OF RECORD																
19 55 to 1964	10-15 1956	.25	10-15 1956	.24	10-15 1956	.47	10-15 1956	1.35	10-15 1956	2.55	10-15 1956	3.14	10-15 1956	6.21	10-15 1956	8.67
NOTES: Watershed conditions: range and forest, 60%; improved pasture, 30%; miscellaneous, 10%. 1/ Precipitation Thiessen weighted using 2 gages. 2/ Runoff data furnished by U.S. Geological Survey. 3/ Precipitation and runoff records began July 1955. 4/ Mean P based on 46-yr (1919-1964) U.S. Weather Bureau record period at Okeechobee Hurricane Gate 6, Fla.																
1964 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA WATERSHED W-3									8.3	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	1.11	.00	.04	.00	.00	.57	.05	.00				
2	.00	.00	.00	.00	.19	.00	.03	.02	1.52	.00	.01	.00				
3	.00	.22	.00	.00	.26	.08	.00	.00	.26	.00	.00	.00				
4	.00	1.32	.00	.00	.00	.42	.09	.00	.16	.00	.06	1.69				
5	.00	.91	.00	.17	.00	.10	.00	.26	.25	.32	.00	.19				
6	.00	.02	.00	.00	.00	.13	.00	.24	.00	.00	.00	.00				
7	.75	.00	.00	.00	.00	.00	1.16	.22	.00	.00	.00	.00				
8	.00	.04	.00	.00	.00	.00	.04	.26	.00	.00	.00	.00				
9	.00	.00	.00	.00	.00	.02	.00	.00	.32	.00	.00	.00				
10	.00	.00	.00	.00	.00	1.32	.06	1.05	1.76	.00	.00	.00				
11	.10	.00	.00	.00	.00	.00	.00	.29	.05	.43	.00	.00				
12	.42	.00	.00	.00	.00	.00	.00	.00	.23	.44	.00	.00				
13	.00	.00	.00	.00	.26	.00	.03	.31	.96	.00	.00	.00				
14	.00	.00	.00	.00	1.34	.00	.00	.00	.01	.21	.05	.00				
15	.00	.00	.17	.00	.00	.00	.06	1.01	.12	.00	.00	.00				
16	.04	.00	.00	.00	.00	.00	.27	.00	.00	.00	.00	.00				
17	.06	.00	.26	.00	.00	.00	.45	.00	.00	.00	.00	.00				
18	.00	.43	.00	.00	.00	.00	.00	.63	.00	.00	.00	.01				
19	.00	.00	.00	.00	.00	.00	.00	.31	.00	.00	.00	.00				
20	.00	.00	.00	.00	.00	.00	.00	3.19	.10	.00	.00	.00				
21	.00	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00	.00				
22	.08	.07	.00	.00	.03	.92	.36	.02	.00	.00	.00	.00				
23	.00	.00	.00	.00	.00	.17	.34	.09	.00	.00	.20	.00				
24	.00	.00	.00	1.54	.00	.00	.35	.01	.00	.00	.00	.00				
25	.00	.00	.00	.09	.00	.96	.87	.00	.00	.23	.09	.00				
26	.00	.00	.00	.26	.00	.00	.00	.06	.04	.00	.00	.33				
27	.00	.17	.00	.20	.00	.00	.00	3.24	.08	.00	.00	.41				
28	.25	.17	.65	.81	.00	.00	.05	.00	.11	.17	.08	.00				
29	.00	.00	.00	.00	.58	.00	.00	.00	.00	.00	.00	.00				
30	.00	-----	.00	.00	.00	1.31	.00	.00	.30	.00	.00	.00				
31	.00	-----	.00	-----	.00	-----	.04	.17	-----	.06	-----	.00				
TOTAL	1.70	3.35	1.08	3.07	3.77	5.43	4.24	11.65	6.27	2.43	0.54	2.63				
STA AV	1.82	2.21	3.66	3.25	4.88	6.74	6.10	6.36	6.80	3.92	1.18	1.68				
NOTES: THIESSEN WEIGHTED AVERAGE OF 2 GAGES. STA AV IS BASED ON PERIOD JULY 1, 1955 THROUGH 1964																

1964 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (TAYLOR CREEK) WATERSHED W-3 8.3						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	21.0	2.3	3.3	.0	3.0	.1	4.2	1.0	81.0	5.0	1.9	.6
2	13.0	2.1	2.1	.0	5.0	.1	3.7	.7	78.0	6.7	1.7	.5
3	9.7	1.9	.0	.0	8.0	.1	3.4	.4	211.0	7.7	1.5	.4
4	7.4	3.3	.0	.0	6.3	.1	3.1	.2	102.0	6.7	1.4	2.2
5	5.9	66.0	.0	.0	3.3	.1	3.0	.2	89.0	5.8	1.4	11.0
6	5.0	120.0	.0	.0	2.3	.1	3.0	.2	94.0	6.1	1.4	8.6
7	6.7	68.0	.0	1.0	1.8	.1	2.8	.2	69.0	5.6	1.2	5.6
8	15.0	42.0	.0	3.0	1.4	.1	2.8	.2	48.0	4.8	.9	4.2
9	14.0	26.0	.0	.5	1.0	.1	2.7	.2	33.0	4.0	.8	3.4
10	11.0	18.0	.0	.0	.8	.1	2.4	.4	245.0	3.6	.8	2.4
11	8.6	14.0	.0	.0	.6	2.0	2.1	.7	201.0	3.0	.7	2.1
12	9.0	11.0	.0	.0	.4	1.8	1.7	2.4	102.0	4.2	.6	1.9
13	14.0	9.3	.0	.0	.3	1.0	1.4	3.1	232.0	6.9	.6	1.7
14	12.0	7.4	.0	.0	.5	.6	.9	2.8	128.0	7.2	.6	1.5
15	9.7	5.9	.0	.0	2.0	.3	.6	2.5	65.0	8.0	.6	1.2
16	7.8	5.0	.0	.0	4.2	.2	.4	3.2	49.0	7.5	.6	1.2
17	6.7	3.8	.0	.0	2.7	.2	.4	2.4	36.0	6.1	.6	1.0
18	6.7	3.3	.0	.0	2.0	.2	.4	2.0	24.0	5.0	.5	.9
19	6.7	5.3	.0	.0	1.6	.2	.4	1.7	18.0	4.2	.5	.9
20	5.9	5.3	.0	.0	1.2	.2	.5	30.0	14.0	3.6	.5	.9
21	5.3	4.0	.0	.0	1.0	.2	.5	80.0	13.0	3.0	.5	.9
22	4.7	3.3	.0	.0	.7	.2	.5	60.0	12.0	2.4	.5	.8
23	4.0	3.3	.0	.0	.5	1.0	.5	40.0	10.0	2.1	.6	.8
24	3.6	3.1	.0	.0	.5	2.0	.4	30.0	9.7	1.9	.6	.8
25	3.1	2.7	.0	.0	.6	2.0	.5	20.0	8.3	1.9	.7	.7
26	2.8	2.3	.0	.0	.4	2.0	1.0	10.0	7.5	1.9	.8	.9
27	2.6	2.2	.0	.0	.3	1.6	1.8	254.0	6.7	2.3	.8	1.0
28	2.7	2.7	.0	2.0	.2	1.2	1.8	468.0	6.4	2.1	.7	1.7
29	3.0	3.8	.0	2.9	.1	1.2	1.8	230.0	6.0	2.1	.7	1.7
30	3.0	-----	.0	4.0	.1	5.0	1.6	102.0	5.6	2.3	.7	1.7
31	2.7	-----	.0	-----	.1	-----	1.0	66.0	-----	2.1	-----	1.4
MEAN	7.53	15.4	.17	.45	1.71	.80	1.65	45.6	66.8	4.38	.85	2.08
INCHES	.56	1.06	.01	.03	.11	.06	.12	3.36	4.75	.32	.06	.15

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY MULTIPLY BY .002368. RUNOFF DATA FURNISHED BY U.S. GEOLOGICAL SURVEY. RECORDS ARE POOR. PROBABLY ACCURATE WITHIN 5 TO 15 PERCENT.

1964			SELECTED RUNOFF EVENT				VERO BEACH, FLORIDA (TAYLOR CREEK)				WATERSHED W-3		8.3						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF												
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)									
8-27	.00	2/T	Event of August 27-31, 1964				8-27	0400	6.6	.0000									
			2 RG	AVG 1/	0500	.00					.00								
												0900	.15	.60					
															1100	.30	1.20		
																		1200	.52
								1300	.23	1.95									
			1400	.70	2.65	8-28					2200	650	.4890						
								1500	.38	3.03									
														1700	.09	3.21			
																	1900	.02	3.25
			1800	622	.2379														
						2200		593	.7344										
										0800	492	1.055							
													1200	476	1.247				
			2400	330	1.724														
						8-29		0400	296	1.848									
			1200	227	2.054														
											1600	216	2.142						
1800	184	2.181																	
							2400							148	2.279				
8-30	0400	128	2.334																
				0800	124	2.384													
							1200	99	2.428										
										1600	86	2.464							
													2400	75	2.528				
8-31	0800	67	2.584																
				1200	61	3/2.609													
							1800	56	2.644										

Watershed conditions:

Approximate land use: (from SCS)

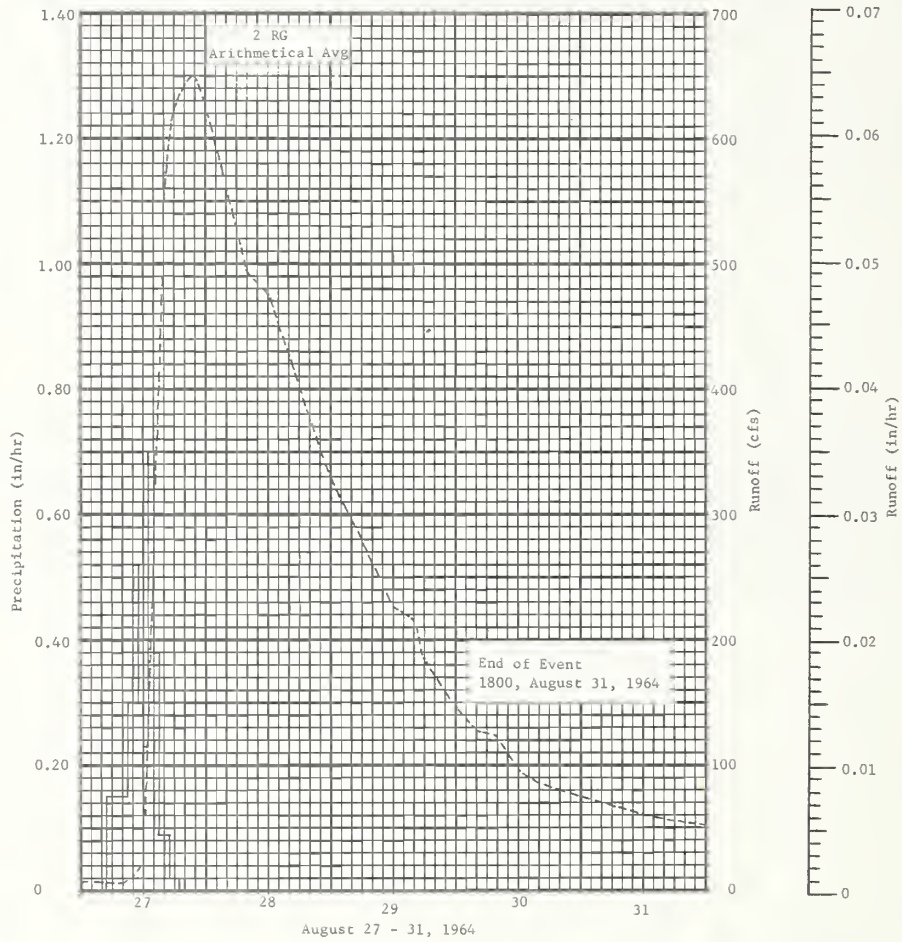
30% in improved pasture

60% in range and forest

10% in miscellaneous

Watershed conditions:
Approximate land use: (from SCS)
30% in improved pasture
60% in range and forest
10% in miscellaneous

NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .00009868. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-59, USDA MISC. PUB. 945, P. 8.2-4. FOR 30-DAY ANTECEDENT P AND Q SEE TABLE ABOVE AND THAT ON PREVIOUS PAGE. 1/ PRECIPITATION IS ARITHMETICAL AVERAGE, 2 GAGES. 2/ RUNOFF PRIOR TO 0400. 3/ END OF EVENT.



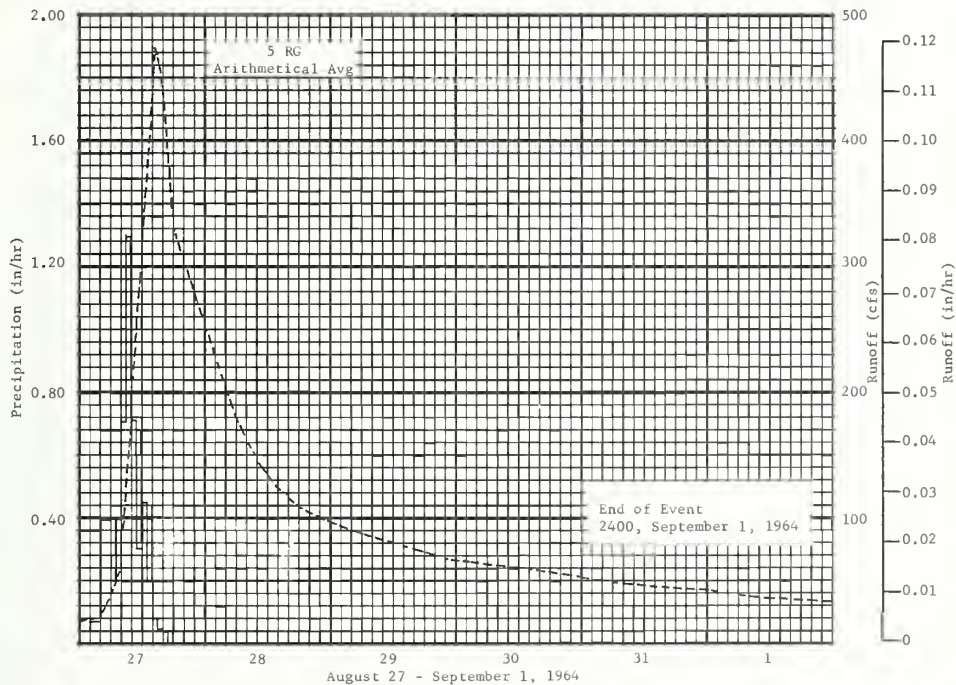
VERO BEACH, FLORIDA WATERSHED W-3

MONTHLY PRECIPITATION ^{1/} AND RUNOFF ^{2/} (inches)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4 8.4 AREA — 3,970 ACRES (6.2 SQ. MILES)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ₃	1.59	2.15	.38	1.76	4.20	3.64	9.61	12.89	6.83	12.70	1.07	1.42	58.24		
	I ₃	.00	.00	1.83	1.96	.84	.21	.10	.36	.00	.00	.00	.15	5.45		
	Q	2.13	.79	.31	.43	.31	.35	1.26	5.03	4.37	7.80	1.84	.49	25.11		
STA AV ₄	P ₃	1.66	2.22	1.82	3.21	5.64	5.49	6.36	7.80	8.74	5.97	2.24	2.37	53.52		
	(61-64)I ₃	.65	.61	1.24	1.20	.45	.12	.16	.21	.08	.13	.40	1.28	6.53		
	(59-64)Q	.80	.53	.47	.74	.92	.90	1.77	2.38	4.10	3.19	1.08	.72	17.60		
MEAN P ₅ 64 YR		2.33	2.45	2.99	3.38	4.24	5.81	5.54	5.69	8.03	7.38	2.72	2.10	52.66		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-27	.118	8-27	.116	8-27	.230	8-27	.612	8-27	1.03	8-27	1.58	8-27	2.26	8-27	3.98
MAXIMUMS FOR PERIOD OF RECORD																
19 59 TO 19 64	9-23 1960	.19	9-23 1960	.19	9-23 1960	.37	9-23 1960	1.02	9-23 1960	1.68	9-24 1960	2.33	9-23 1960	4.08	9-22 1960	9.20
NOTES: Watershed conditions: native range, 70%; improved pasture, 30%. 1/ Precipitation Thiessen weighted using 5 gages. 2/ Runoff data furnished by U.S. Geological Survey. 3/ (I) denotes pumped irrigation which augmented natural rainfall on area. 4/ Precipitation records began Jan. 1959, irrigation in Jan. 1960, and runoff records, July 1959. 5/ Mean P based on 64-yr (1901-1964) U.S. Weather Bureau record period at Fort Pierce No. 1, Fla.																
1964 DAILY PRECIPITATION (inches)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4 8.4										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.91	.35	.47	.00	.00	.14	.02	.00				
2	.00	.00	.00	.00	.08	.03	.07	.00	.16	.59	.00	.00				
3	.00	.20	.00	.00	.00	.11	.52	.00	1.06	.00	.05	.00				
4	.00	.83	.00	.00	.00	1.08	.92	.10	.22	.00	.15	.02				
5	.00	.32	.00	.00	.00	.98	.00	.98	.00	.07	.14	1.03				
6	.00	.26	.00	.00	.00	.39	3.96	.21	.00	.00	.00	.00				
7	.05	.00	.00	.00	.04	.01	.12	.00	.01	.00	.00	.00				
8	.00	.15	.00	.00	.00	.00	.29	.03	.00	.00	.00	.00				
9	.00	.00	.00	.00	.00	.00	.00	.13	.05	.00	.00	.00				
10	.00	.00	.00	.33	.00	.03	.14	.02	.02	.00	.00	.00				
11	.33	.00	.00	.00	.00	.00	.00	.10	.03	2.93	.00	.00				
12	.77	.00	.19	.00	.00	.00	.32	.29	.01	.00	.00	.00				
13	.00	.00	.00	.00	.17	.00	.00	.92	.09	.09	.00	.00				
14	.00	.00	.00	.00	.73	.00	.06	1.12	.18	6.18	.15	.00				
15	.00	.00	.00	.00	.07	.00	.08	.00	1.60	.00	.00	.00				
16	.04	.00	.00	.00	.00	.00	.63	.03	.03	.00	.00	.00				
17	.37	.00	.01	.00	.00	.00	.07	.00	.54	.00	.00	.00				
18	.00	.21	.00	.00	.00	.00	.00	.04	.02	.00	.00	.00				
19	.00	.00	.00	.00	.00	.00	.00	.64	.02	.00	.00	.06				
20	.00	.00	.00	.00	.00	.00	.00	.01	1.38	.00	.00	.00				
21	.00	.00	.00	.00	.00	.00	.00	1.95	.02	.00	.15	.00				
22	.00	.18	.00	.00	.06	.26	.14	.01	.00	.00	.40	.00				
23	.00	.00	.00	.00	.23	.11	.21	.17	.00	.00	.00	.00				
24	.00	.00	.00	.00	.00	.13	.13	.24	.00	.00	.01	.00				
25	.00	.00	.00	.33	.00	.01	1.48	.19	.00	.05	.00	.00				
26	.00	.00	.00	.26	.00	.15	.00	.30	.50	.02	.00	.00				
27	.03	.00	.14	.04	1.91	.00	.00	5.40	.56	.00	.00	.31				
28	.00	.00	.04	.62	.00	.00	.00	.01	.19	1.91	.00	.00				
29	.00	.00	.00	.00	.00	.00	.00	.00	.05	.26	.00	.00				
30	.00	-----	.00	.18	.00	.00	.00	.00	.11	.14	.00	.00				
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.32	-----	.00				
TOTAL	1.59	2.15	.38	1.76	4.20	3.64	9.61	12.89	6.83	12.70	1.07	1.42				
STA AV	1.66	2.22	1.82	3.21	5.64	5.49	6.36	7.80	8.74	5.97	2.24	2.37				
NOTES: THIESSEN WEIGHTED RAINFALL 5 GAGES. STA AV BASED ON PERIOD FROM JANUARY 1959 THROUGH 1964																

1964 DAILY IRRIGATION (inches)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4 8.4						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.12	.00	.00	.04	.04	.00	.00	.00	.00
2	.00	.00	.00	.08	.00	.00	.06	.05	.00	.00	.00	.00
3	.00	.00	.00	.08	.00	.00	.00	.04	.00	.00	.00	.00
4	.00	.00	.00	.04	.00	.00	.00	.08	.00	.00	.00	.00
5	.00	.00	.00	.10	.00	.00	.00	.04	.00	.00	.00	.00
6	.00	.00	.02	.06	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.12	.12	.05	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.04	.08	.12	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.09	.12	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.07	.05	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.06	.00	.00	.00	.00	.04	.00	.00	.00	.00
12	.00	.00	.09	.00	.08	.00	.00	.04	.00	.00	.00	.00
13	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.04	.05	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.08	.00	.00	.04	.00	.00	.00	.00	.00	.00
18	.00	.00	.04	.00	.00	.08	.00	.00	.00	.00	.00	.00
19	.00	.00	.08	.09	.00	.00	.00	.03	.00	.00	.00	.00
20	.00	.00	.12	.12	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.12	.12	.04	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.12	.12	.08	.05	.00	.00	.00	.00	.00	.00
23	.00	.00	.12	.12	.00	.04	.00	.00	.00	.00	.00	.00
24	.00	.00	.12	.12	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.12	.12	.04	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.12	.12	.12	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.12	.10	.08	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.08	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07
31	.00	.00	.08	.00	.00	.00	.00	.00	.00	.00	.00	.08
TOTAL	.00	.00	1.83	1.96	.84	.21	.10	.36	.00	.00	.00	.15
STA AV	.65	.61	1.24	1.20	.45	.12	.16	.21	.08	.13	.41	1.28
NOTES: IRRIGATION COMPUTED FROM STAGE-LIFT CURVE AGAINST HOURS OF PUMP OPERATION. STA AV IS BASED ON PERIOD OF 1961 THROUGH 1964.												
1964 MEAN DAILY DISCHARGE (cfs)						VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4 8.4						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	53.0	1.8	1.0	1.5	1.4	1.0	2.3	3.6	38.0	14.0	34.0	2.5
2	24.0	1.7	1.0	1.7	1.6	1.0	2.6	5.3	33.0	16.0	29.0	2.3
3	14.0	8.0	1.0	1.5	1.7	1.0	2.5	7.5	42.0	18.0	25.0	1.9
4	8.8	13.0	.9	1.5	1.6	1.0	2.6	11.0	45.0	14.0	25.0	1.9
5	8.0	27.0	1.6	1.4	1.2	4.6	2.5	15.0	37.0	11.0	22.0	3.0
6	8.8	19.0	1.0	1.5	1.2	6.6	22.0	6.2	30.0	9.6	16.0	5.7
7	12.0	8.4	1.4	1.6	1.2	6.0	30.0	4.2	25.0	8.8	17.0	4.9
8	9.2	6.6	2.0	1.9	1.8	3.7	21.0	3.1	21.0	7.6	12.0	4.2
9	9.2	4.6	1.5	1.9	2.6	2.5	16.0	2.5	19.0	6.9	5.5	3.5
10	9.2	2.8	1.2	2.2	2.6	1.8	12.0	1.4	16.0	6.2	9.6	3.1
11	8.4	2.6	1.2	2.2	2.0	1.4	9.2	.9	14.0	25.0	9.6	2.8
12	41.0	2.3	1.5	2.0	1.8	1.1	7.2	6.2	13.0	60.0	9.2	2.5
13	35.0	1.9	1.7	2.3	2.5	.9	6.6	2.4	12.0	36.0	8.8	2.3
14	20.0	1.7	1.5	1.9	2.6	.8	5.1	13.0	10.0	84.0	8.4	2.0
15	13.0	1.5	1.4	2.2	2.3	.6	4.2	20.0	19.0	300.0	8.4	2.0
16	8.8	3.5	1.5	2.0	2.0	.6	4.2	12.0	33.0	124.0	7.2	1.9
17	19.0	3.0	2.2	2.0	1.9	.7	6.0	8.0	25.0	85.0	6.9	1.9
18	9.2	2.6	1.8	2.2	1.8	2.5	5.1	5.5	28.0	63.0	5.7	1.9
19	7.6	7.2	1.8	2.0	1.7	2.0	3.9	1.8	22.0	51.0	4.9	1.8
20	4.9	1.5	2.2	2.5	1.7	1.5	2.8	2.8	39.0	43.0	3.9	1.8
21	3.3	1.1	2.5	3.3	1.5	1.1	2.2	27.0	38.0	35.0	3.5	1.7
22	4.6	1.2	2.3	4.4	1.4	.9	1.8	40.0	28.0	20.0	4.9	1.7
23	3.0	1.5	2.0	12.0	1.0	1.9	1.8	26.0	22.0	22.0	5.7	1.6
24	2.3	1.5	1.9	2.2	.9	1.9	1.8	23.0	18.0	22.0	4.9	1.4
25	1.8	1.4	1.9	2.3	.8	1.6	3.4	22.0	15.0	20.0	4.4	1.2
26	1.8	1.2	1.8	2.6	1.2	1.6	10.0	18.0	13.0	19.0	3.5	1.2
27	2.6	1.1	1.8	1.9	2.7	2.3	7.2	214.0	19.0	17.0	3.1	1.2
28	4.4	1.1	2.0	1.6	1.7	2.0	5.1	149.0	21.0	37.0	3.1	1.2
29	3.0	1.0	2.8	1.5	1.2	1.7	3.9	81.0	18.0	51.0	2.8	1.2
30	2.6	.00	1.8	1.2	1.1	1.4	3.1	60.0	16.0	39.0	2.8	2.5
31	2.3	.00	1.4	.00	1.0	.00	2.8	47.0	.00	36.0	.00	13.0
MEAN	11.5	4.54	1.66	2.37	1.67	1.92	6.80	26.8	24.3	42.0	10.2	2.64
INCHES	2.14	.79	.31	.42	.31	.35	1.27	5.03	4.39	7.80	1.84	.49
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY MULTIPLY BY .005995. RUNOFF DATA FURNISHED BY U.S. GEOLOGICAL SURVEY. RECORDS ARE FAIR TO POOR. FLOW OCCASIONALLY REGULATED BY STOPLOG CONTROL 1,500 FT UPSTREAM. IRRIGATION INFLOW EXCESS INCLUDED IN DISCHARGE.												

1964 SELECTED RUNOFF EVENT			VERO BEACH, FLORIDA (MONREVE RANCH) WATERSHED W-4								8.4
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of August 27—September 1, 1964											
8-27	.00	.00	8-27	5 RG	AVG 1/		8-27				
				0000	.00	.00		0000	18	.0000	
				0200	.01	.02		0400	20	.0190	
				0400	.07	.15		0800	63	.0605	
				0600	.39	.93		1430	474	.4966	
				0700	.20	1.13		1600	438	.6676	
				0800	.39	1.52		1800	332	.8600	
				0900	.71	2.23		8-28	0600	180	1.628
				1000	1.29	3.52		1000	146	1.791	
				1100	.72	4.24		1400	124	1.926	
Watershed conditions: Approximate land use: (from SCS) 70% in native range 30% in improved pasture Good cover on entire area				1200	.31	4.55	1800	110	2.042		
				1300	.45	5.00	2400	99	2.199		
				1400	.20	5.20	8-29	0600	89	2.340	
				1500	.08	5.28	1200	81	2.468		
				1600	.05	5.33	2400	68	2.691		
				1700	.04	5.37	8-30	1200	61	2.884	
							2400	53	3.055		
							8-31	1200	47	3.205	
							2400	43	3.340		
							9-1	1200	37	3.460	
				2400	34	2/ 3.567					

NOTES: TO CONVERT CFS TO IN/HR MULTIPLY BY .0002498 FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1962 USDA MISC. PUB.1070, 8.4-11. FOR 30-DAY ANTECEDENT P AND Q SEE TABLES ON 2 PREVIOUS PAGES. 1/ PRECIPITATION ARITHMETICAL AVERAGE, 5 GAGES. 2/ END OF EVENT.



VERO BEACH, FLORIDA WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)							WATKINSVILLE, GEORGIA				WATERSHED W-1 AREA--19.2 ACRES				10.01	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P	6.18	5.05	10.39	9.23	3.97	3.58	15.62	3.07	1.87	7.51	2.16	3.74	72.37		
	O	.33	.57	3.81	3.01	2.67	.01	5.03	.00	.00	.64	.00	.03	16.10		
STA AVG 1/ (40-64) O		4.86	4.79	6.19	4.56	3.66	3.80	5.25	3.86	3.07	2.73	3.55	4.65	50.97		
MEAN P 2/ 80 YR		.52	.43	.67	.55	.39	.26	.49	.40	.03	.08	.35	.27	4.44		
		4.72	4.89	5.26	3.93	3.64	4.18	5.19	4.35	3.36	2.98	2.84	4.39	49.73		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE	MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
		1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
		DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964		3-25	1.08	3-25	.94	3-25	1.31	3-25	1.86	3-25	2.12	3-25	2.46	7-18	4.87	
MAXIMUMS FOR PERIOD OF RECORD																
1940 TO 1964	4-25 1945	2.71	6-26 1963	1.84	6-26 1963	2.54	6-26 1963	3.48	6-26 1963	3.74	6-26 1963	3.78	11-27 1948	5.68	11-22 1948	6.64
NOTES: Quality of P and Q records, excellent. Watershed conditions: Jan., rye and dormant Coastal Bermudagrass; Feb.- Apr., rye grazed (1651 cow-days); April, Coastal Bermudagrass, good vigorous sod; May, 561 lb/ac 0-10-20 plus 225 lb/ac 33.5-0-0 applied; June, 225 lb/ac 33.5-0-0 applied; June - Nov., grazed (9024 cow-days); and on Dec. 31, dormant Coastal Bermudagrass, no winter grain oversown. 1/ Sept.-Dec. 1939 data dropped from station average data; record now on a calendar year basis. 2/ Mean P based 80-yr (1885-1964) U.S. Weather Bureau record period at Athens, Ga.																
1964 SELECTED RUNOFF EVENTS							WATKINSVILLE, GEORGIA				WATERSHED W-1				10.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE 3/ (in/hr)	ACC. (inches)						
Event of March 25-26, 1964																
	RG R1-W1		3-25	RG	R1-W1		3-25	0820	.0000	.0000						
2-25	.50	.0000		0733	.00	.00		1020	.0090	.0090						
2-27	.12	.0000		0800	.16	.07		1022	.0122	.0094						
2-28	.14	.0000		0900	.25	.32		1029	.0118	.0108						
3-3	1.67	.2808		1000	.10	.42		1036	.0162	.0124						
3-4	.46	.1150		1015	.12	.45		1044	.0176	.0146						
3-5	.44	.1104		1030	.44	.56		1050	.0244	.0167						
3-10	.36	.0046		1045	.44	.67		1110	.0369	.0269						
3-14	2.02	.8098		1100	.52	.80		1120	.0369	.0339						
3-15	.64	.0000		1115	.40	.90		1130	.0364	.0406						
3-19	.21	.0000		1130	.28	.97		1144	.0324	.0494						
3-20	.12	.0000		1145	.20	1.02		1200	.0301	.0589						
3-21	.17	.0000		1200	.24	1.08		1208	.0289	.0628						
3-24	.10	.0000		1230	.30	1.23		1250	.0391	.0866						
				1300	.18	1.32		1325	.0416	.1108						
				1330	.00	1.32		1335	.0462	.1174						
				1400	.44	1.54		1405	.0497	.1414						
				1430	.04	1.56		1425	.0475	.1576						
				1500	.10	1.61		1440	.0473	.1694						
				1530	.08	1.65		1500	.0412	.1842						
				1600	.08	1.69		1600	.0325	.2210						
				1630	.28	1.83		1620	.0388	.2329						
				1645	.40	1.93		1630	.0496	.2403						
				1700	.16	1.97		1645	.0717	.2555						
				1710	.42	2.04		1650	.0810	.2619						
				1720	.78	2.17		1700	.0976	.2768						
				1730	.84	2.31		1707	.1184	.2894						
				1740	1.74	2.60		1718	.1903	.3177						
				1745	1.92	2.76		1720	.2134	.3244						
				1750	.84	2.83		1725	.2951	.3455						
				1755	1.56	2.96		1730	.4397	.3762						
				1800	.72	3.02		1732	.5051	.3920						
				1805	.72	3.08		1734	.5849	.4102						
				1810	.72	3.14		1736	.6826	.4314						
				1823	.23	3.19		1738	.7384	.4551						
				1827	1.35	3.28		1740	.7967	.4807						
				1837	.54	3.37		1742	.8649	.5084						
				1850	.18	3.41		1744	.9280	.5383						
				1901	.49	3.50		1746	.9806	.5702						
				1915	.17	3.54		1750	1.0589	.6392						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 10.1-8. 3/ RUNOFF RATES CORRECTED FOR PONDAGE BACK OF WEIR.																

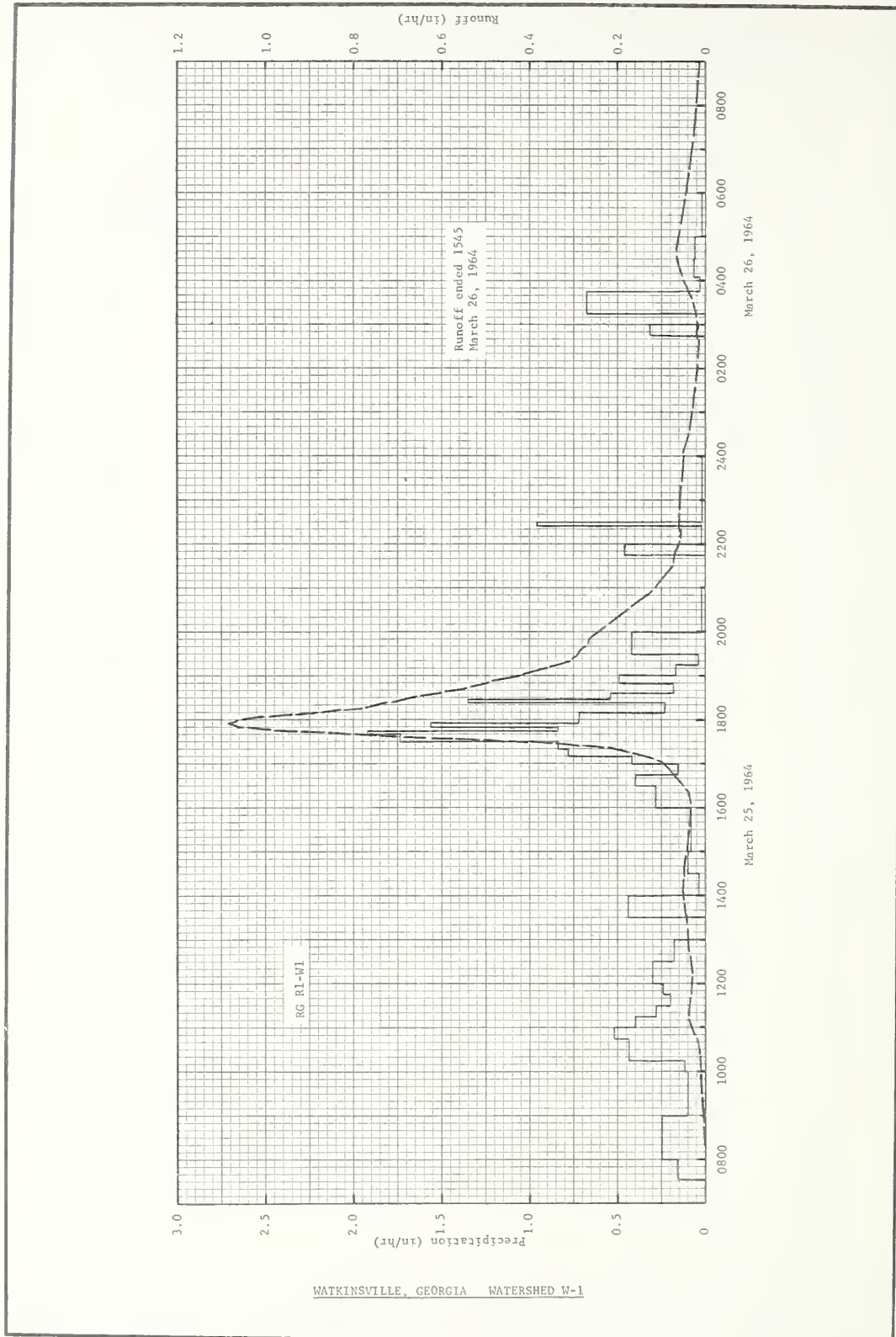
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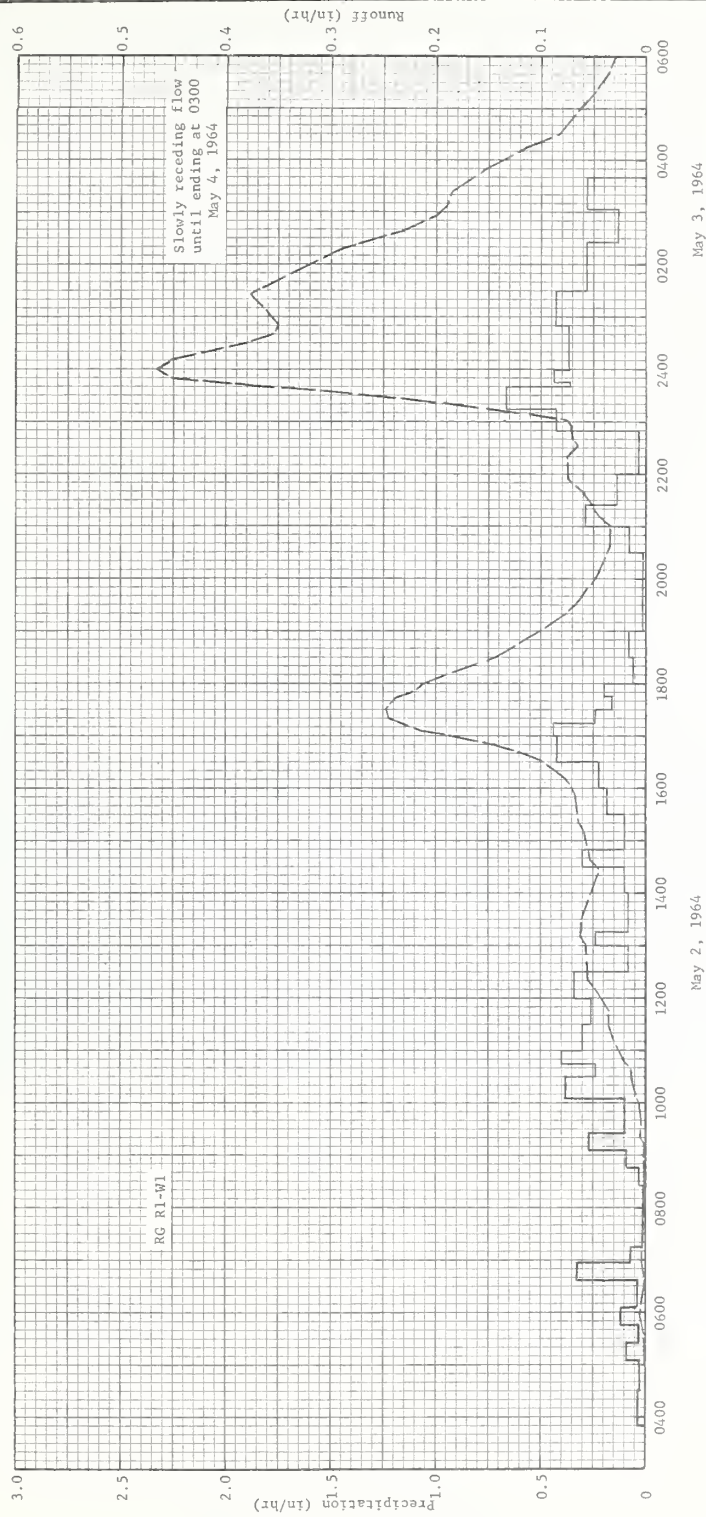
1964			SELECTED RUNOFF EVENTS				WATKINSVILLE, GEORGIA		WATERSHED W-1		10.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE $\frac{1}{2}$ (in/hr)	ACC. (inches)	
			Event of March 25-26, 1964—Continued								
			3-25	RG 1930	R-1-W1 .04	3.55	3-25	1754	1.0744	.7102	
				2000	.42	3.76		1756	1.0846	.7462	
				2100	.02	3.78		1800	1.0531	.8174	
				2145	.00	3.78		1805	.9793	.9022	
				2200	.46	3.86		1810	.8707	.9793	
				2225	.02	3.87		1815	.7806	1.0481	
				2230	.96	3.95		1821	.7369	1.1240	
				2400	.02	3.96		1831	.6577	1.2402	
			3-26	0245	.00	3.96		1840	.5634	1.3318	
				0300	.32	4.04		1845	.5258	1.3772	
				0315	.00	4.04		1851	.4943	1.4282	
				0345	.68	4.21		1900	.4253	1.5048	
				0405	.03	4.22		1910	.3643	1.5706	
				0430	.07	4.25		1920	.3109	1.6268	
				0500	.06	4.28		1928	.2927	1.6671	
				0600	.02	4.30		1936	.2846	1.7056	
								1940	.2703	1.7241	
								1950	.2634	1.7685	
								2050	.1292	1.9648	
								2130	.0745	2.0327	
								2140	.0701	2.0447	
								2150	.0670	2.0561	
								2210	.0556	2.0765	
								2217	.0547	2.0829	
								2220	.0599	2.0858	
								2318	.0561	2.1419	
								2330	.0540	2.1529	
								2400	.0497	2.1788	
							3-26	0006	.0522	2.1839	
								0030	.0386	2.2027	
								0100	.0287	2.2189	
								0200	.0184	2.2307	
								0230	.0163	2.2385	
								0238	.0158	2.2406	
								0247	.0203	2.2433	
								0250	.0200	2.2443	
								0258	.0184	2.2469	
								0310	.0209	2.2508	
								0330	.0281	2.2590	
								0400	.0505	2.2786	
								0415	.0594	2.2923	
								0430	.0636	2.3077	
								0445	.0656	2.3239	
								0500	.0616	2.3451	
								0600	.0437	2.3933	
								0700	.0291	2.4297	
								0900	.0123	2.4504	
								1100	.0057	2.4684	
								1300	.0009	2.4750	
								1545	.0000	2.4853	
			Event of May 2-4, 1964								
	RG R1-W1		5-2	RG	R1-W1		5-2	0500	.0000	.0000	
4-2	.00	.0000		0350	.00	.00		0530	.0005	.0000	
4-3	.07	.0000		0430	.04	.03		0554	.0050	.0011	
4-4	.10	.0000		0505	.03	.05		0634	.0004	.0029	
4-6	3.52	1.5005		0525	.09	.08		0640	.0010	.0030	
4-7	1.11	.7746		0545	.03	.09		0700	.0026	.0036	
4-12	.11	.0000		0605	.12	.13		0730	.0013	.0046	
4-13	.72	.0210		0638	.04	.15		0800	.0008	.0051	
4-23	.04	.0000		0658	.33	.26		0830	.0006	.0054	
4-24	.13	.0000		0715	.07	.28		0900	.0010	.0058	
4-25	.87	.0023		0825	.01	.29		0910	.0003	.0059	
4-26	.61	.0000		0845	.03	.30		0920	.0041	.0063	
4-27	1.83	.6124		0905	.09	.33		0940	.0036	.0076	
4-28	.50	.1018		0925	.27	.42		1000	.0058	.0092	
5-1	.03	.0000		1005	.10	.49		1010	.0092	.0104	
Continued on next page											
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. $\frac{1}{2}$ RUNOFF RATES CORRECTED FOR PONDAGE BACK OF WEIR.											

1964 SELECTED RUNOFF EVENTS			WATKINSVILLE, GEORGIA				WATERSHED W-1				10.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	1/	ACC. (inches)
			Event of May 2-4, 1964 - Continued								
			5-2	RG	R1-W1		5-2	1016	.0108		.0114
				1030	.38	.65		1028	.0130		.0138
				1045	.24	.71		1038	.0140		.0160
				1100	.40	.81		1046	.0189		.0182
				1130	.30	.96		1105	.0276		.0256
Watershed conditions: Good, vigorous Coastal Bermudagrass sod, oversown, rye grazed Feb., Mar., Apr., (1651 cow-days). Applied 561 lb/ac. 0-10-20 and 225 lb/ac. 33.5-0-0 on May 1. Not grazed in May.				1200	.26	1.09		1130	.0337		.0384
				1230	.34	1.26		1146	.0348		.0475
				1300	.08	1.30		1210	.0483		.0641
				1315	.24	1.36		1220	.0543		.0726
				1400	.08	1.42		1300	.0660		.1126
				1430	.10	1.47		1310	.0619		.1232
				1450	.30	1.57		1330	.0613		.1437
				1530	.10	1.64		1418	.0468		.1869
				1600	.18	1.73		1428	.0449		.1945
				1630	.22	1.84		1438	.0530		.2026
				1700	.42	2.05		1455	.0567		.2181
				1715	.44	2.16		1508	.0585		.2305
				1730	.24	2.22		1520	.0631		.2427
				1745	.16	2.26		1550	.0671		.2752
				1800	.20	2.31		1600	.0700		.2866
				1830	.06	2.34		1610	.0771		.2988
				1900	.08	2.38		1630	.0990		.3281
				2030	.01	2.39		1640	.1175		.3379
				2100	.08	2.43		1650	.1460		.3598
				2125	.29	2.55		1700	.1872		.3875
				2200	.14	2.63		1706	.2135		.4075
				2250	.04	2.66		1710	.2255		.4221
				2315	.43	2.84		1720	.2465		.4614
				2340	.67	3.12		1730	.2479		.5026
				2345	.36	3.15		1742	.2388		.5513
			5-3	2400	.44	3.26		1750	.2219		.5820
				0050	.37	3.57		1800	.2115		.6181
				0130	.43	3.86		1810	.1900		.6515
				0225	.28	4.12		1830	.1425		.7069
				0303	.13	4.20		1842	.1248		.7336
				0340	.28	4.37		1900	.0999		.7673
								1919	.0776		.7954
								1930	.0684		.8088
								1940	.0600		.8195
								2000	.0494		.8377
								2008	.0453		.8440
								2018	.0407		.8512
								2036	.0351		.8626
								2050	.0336		.8706
								2100	.0344		.8763
								2105	.0398		.8794
								2112	.0459		.8844
								2120	.0499		.8908
								2137	.0601		.9064
								2150	.0709		.9206
								2156	.0739		.9278
								2210	.0749		.9452
								2220	.0749		.9577
								2232	.0656		.9717
								2240	.0700		.9807
								2256	.0707		.9994
								2300	.0751		1.0042
								2305	.0897		1.0111
								2328	.2389		1.0741
								2334	.3089		1.1015
								2340	.3705		1.1355
								2350	.4506		1.2039
								2400	.4664		1.2803
								0010	.4507		1.3567
								0020	.4148		1.4288
								0030	.3791		1.4949
								0040	.3542		1.5743
								0050	.3497		1.6153
								0125	.3755		1.8268
								0132	.3643		1.8699
			Continued on next page				5-3				

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. 1/RUNOFF RATES CORRECTED FOR PONDAGE BACK OF WEIR.

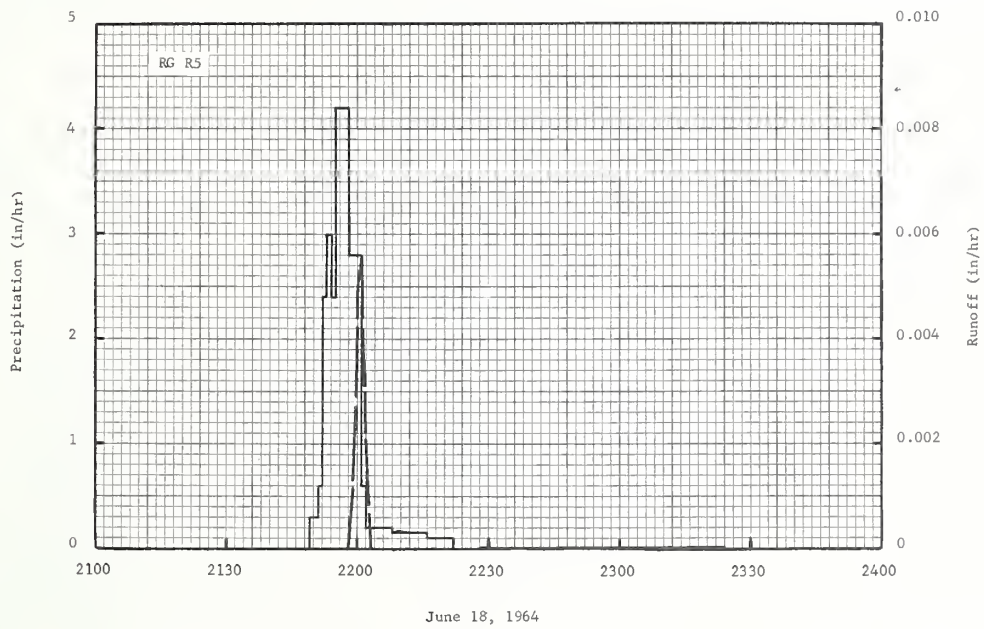
1964 SELECTED RUNOFF EVENTS			WATKINSVILLE, GEORGIA				WATERSHED W-1				10.01
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	1/ ACC. (inches)	
			Event of May 2-4, 1964—Continued				5-3	0214	.2925	2.0998	
								0238	.2317	2.2046	
								0254	.2005	2.2622	
								0304	.1911	2.2948	
								0322	.1856	2.3513	
								0348	.1544	2.4250	
								0412	.1158	2.4790	
								0430	.0816	2.5086	
								0500	.0616	2.5444	
								0520	.0494	2.5629	
								0526	.0449	2.5676	
								0534	.0399	2.5732	
								0542	.0364	2.5782	
								0604	.0288	2.5902	
								0628	.0226	2.6005	
								0700	.0172	2.6111	
								0730	.0138	2.6188	
								0806	.0110	2.6262	
								0840	.0092	2.6319	
								0920	.0077	2.6375	
								1016	.0062	2.6440	
								1114	.0049	2.6494	
								1200	.0043	2.6529	
								1400	.0039	2.6611	
								1500	.0034	2.6647	
								1540	.0026	2.6667	
								1626	.0026	2.6687	
								1710	.0016	2.6702	
								1810	.0015	2.6717	
								2000	.0008	2.6723	
								2100	.0006	2.6730	
								2300	.0002	2.6738	
							5-4	0030	.0000	2.6739	
								0130	.0000	2.6739	
								0216	.0001	2.6739	
								0300	.0000	2.6739	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.3599. 1/ RUNOFF RATES CORRECTED FOR PONDAGE BACK OF WEIR.											





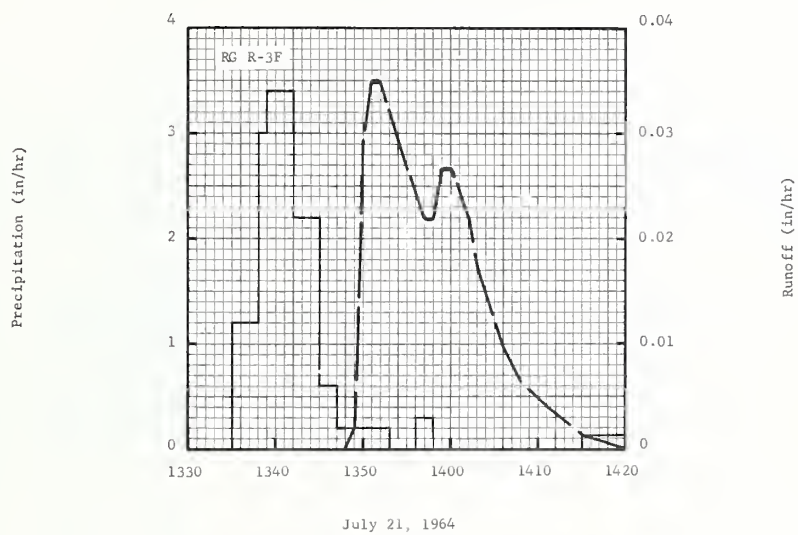
WATKINSVILLE, GEORGIA WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA WATERSHED W-III AREA—19.3 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ₁ /O	3.71 1.69	3.84 .03	2.61 T	3.96 T	2.06 T	1.58 T	3.84 T	4.07 T	2.94 T	2.85 T	2.53 T	2.10 T	36.09 1.72		
STA AVG (40-64)	2/P O	2.65 .07	2.86 .01	3.27 T	3.03 .04	3.57 .05	3.78 .12	3.88 .06	3.60 .04	2.93 .01	2.23 T	2.24 .01	2.77 .01	36.81 .42		
MEAN 74 YR	3/P	3.18	3.10	3.65	3.14	3.68	4.12	4.64	3.95	3.00	2.69	2.38	3.07	40.60		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	1-20	.17	1-20	.17	1-21	.33	1-21	.80	1-21	.92	1-21	.92	1-20	1.32	1-19	1.52
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-5 1942	1.90	6-16 1942	.49	6-16 1942	.50	1-21 1964	.80	1-21 1964	.92	1-21 1964	.92	1-20 1964	1.32	1-19 1964	1.52
NOTES: Watershed conditions: 89% cultivated; contour strips with a rotation of corn, small grain and clover. 9% pasture, usually good cover. 2% woodland. 1/ Precipitation obtained from rain gage R-5. 2/ Determined from continuous records, 1940-64; precipitation and runoff records began May 1939. 3/ Mean P based on 74-yr (1891-1964) U. S. Weather Bureau record period at Blacksburg, Virginia. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
1964 SELECTED RUNOFF EVENT							BLACKSBURG, VIRGINIA WATERSHED W-III 13.02									
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R5			Event of June 18, 1964												
				RG	R5											
5-23	.11	.0000	6-18	2149	.00	.00	6-18	2158	.0000	.0000						
5-25	.12	.0000		2151	.30	.01		2159	.0009	T						
5-28	.69	.0002		2152	.60	.02		2200	.0050	T						
5-29	.04	.0003		2153	2.40	.06		2201	.0056	.0001						
6-1	.67	.0001		2154	3.00	.11		2202	.0021	.0002						
6-2	.16	.0000		2155	2.40	.15		2203	.0000	.0002						
6-7	.09	.0000		2158	4.20	.36										
6-8	.03	.0000		2201	2.80	.50										
				2202	.60	.51										
				2208	.20	.53										
Watershed conditions:																
Contour strips - barley 36 to 46 in. high, and ripening, 51.4%; orchardgrass and clover mixture 36 in. high, 24.6%; corn 15 in. high, clean tilled, 12.6%; pasture, good cover, 8.9% woodlot, good cover, 2.5%.																
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 19.4544. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, JANUARY 1960, P. 13.2-4																



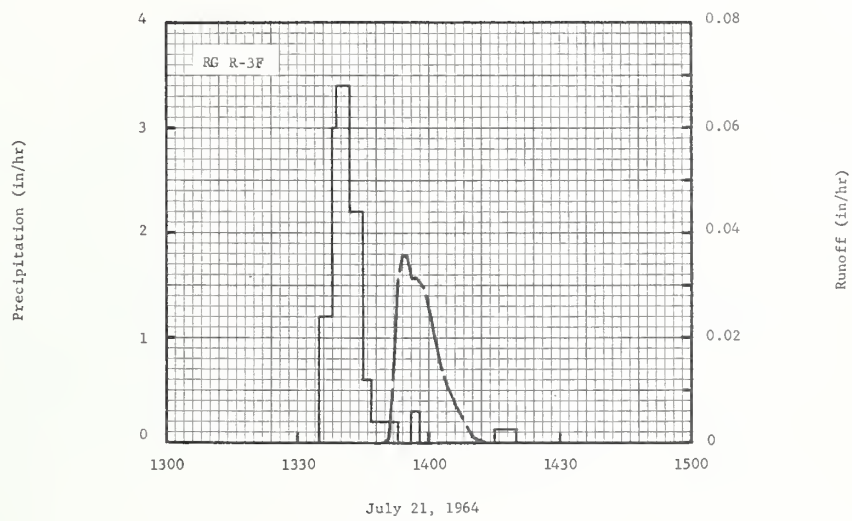
BLACKSBURG, VIRGINIA WATERSHED W-III

MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA WATERSHED W-IV AREA—3.49 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	1/	3.19	3.72	2.81	3.63	2.08	1.23	3.97	3.68	2.91	2.45	2.25	2.11	34.03		
	Q	.16	.00	.00	.00	.00	.00	.01	.01	T	T	.00	.00	.18		
	2/ P	2.43	3.19	3.44	2.97	3.07	3.21	3.08	3.36	3.04	2.16	2.32	2.78	35.05		
(52-64) Q		.04	.01	.01	.01	.02	.01	.01	.04	.02	T	T	.01	.18		
MEAN 3/		3.18	3.10	3.65	3.14	3.68	4.12	4.64	3.95	3.00	2.69	2.38	3.07	40.60		
74 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	1-9	.04	1-9	.03	1-9	.05	1-9	.07	1-9	.07	1-9	.07	1-9	.07	1-9	.07
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1964	5-5 1958	.75	5-5 1958	.21	5-5 1958	.21	5-5 1958	.23	5-5 1958	.24	5-5 1958	.24	5-5 1958	.24	5-5 1958	.24
NOTES: Watershed conditions: All cultivated; contour strips with rotation of corn, small grain and clover. A mulch tillage program is practiced. No crop residue removed except one clover hay crop each year. 1/ Precipitation obtained from rain gage R-3F. 2/ Determined from continuous records, 1952-64; precipitation and runoff records began September 1951. 3/ Mean P based on 74-yr (1891-1964) U. S. Weather Bureau record period at Blacksburg, Virginia. Missing records for 11 months were estimated from nearby Weather Bureau records Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg Va.																
1964 SELECTED RUNOFF EVENT							BLACKSBURG, VIRGINIA WATERSHED W-IV 13.03									
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-3F			Event of July 21, 1964												
				RG	R-3F											
6-22	.02	.0000	7-21	1335	.00	.00	7-21	1348	.0000	.0000						
6-23	.03	.0000		1338	1.20	.06		1349	.0020	.0000 T						
7-4	.05	.0000		1339	3.00	.11		1350	.0293	.0003						
7-9	.05	.0000		1342	3.40	.28		1351	.0350	.0008						
7-12	.98	.0000		1345	2.20	.39		1352	.0350	.0014						
7-13	.03	.0000		1347	.60	.41		1353	.0321	.0020						
7-17	.12	.0000		1353	.20	.43		1355	.0267	.0030						
7-18	.02	.0000		1356	.00	.43		1357	.0219	.0038						
7-19	1.29	.0000		1358	.30	.44		1358	.0219	.0042						
7-20	.27	.0000		1415	.00	.44		1359	.0267	.0046						
7-21	4/.46	.0000		1420	.12	.45		1400	.0267	.0050						
								1402	.0219	.0058						
								1403	.0173	.0061						
								1406	.0099	.0068						
								1408	.0065	.0071						
Watershed conditions: Contour strips - clover, orchardgrass, meadow stubble 9 to 10 in. high, 48%; corn, clean tilled 7 to 9 ft. high, 21%; oat stubble interplanted with clover and orchardgrass 3 to 4 in. high, 31%; all good cover.																
								1411	.0040	.0074						
								1415	.0014	.0076						
								1418	.0006	.0076						
								1420	.0000	.0076						
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 3.519. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. NO. 994, P. 13.3-5. 4/ .43 IN. FROM 1048 TO 1200 AND .03 IN. FROM 1206 TO 1316.																



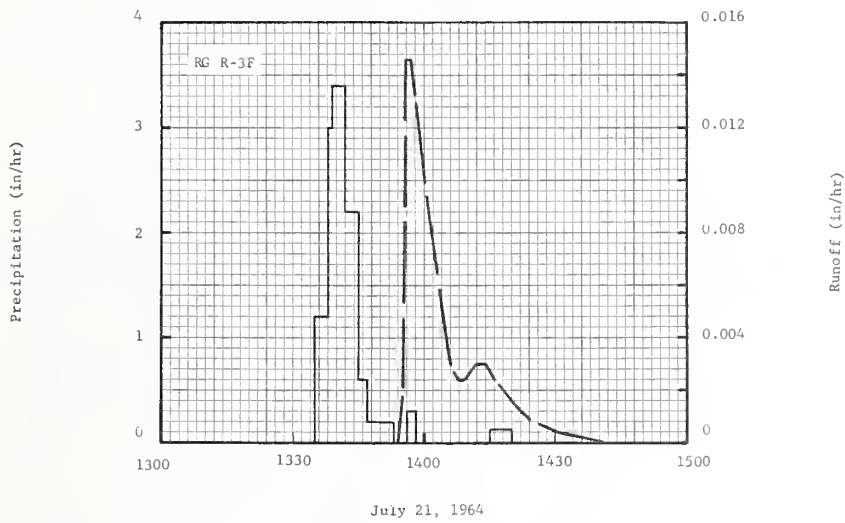
BLACKSBURG, VIRGINIA WATERSHED W-IV

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA WATERSHED W-V AREA—6.08 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	3.19 .05	3.72 .00	2.81 .00	3.63 .00	2.08 .00	1.23 .00	3.97 .01	3.68 .00	2.91 .00	2.45 T	2.25 .00	2.11 .00	34.03 .06			
STA AVG 2/ (52-64) 3/ P 3/ Q	2.43 .03	3.19 .02	3.44 .02	2.97 T	3.07 .01	3.21 .01	3.08 T	3.36 .02	3.04 .01	2.16 T	2.32 T	2.78 .01	35.05 .13			
74 YR	3.18	3.10	3.65	3.14	3.68	4.12	4.64	3.95	3.00	2.69	2.38	3.07	40.60			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-21	.04	1-9	.02	1-9	.04	1-9	.04	1-9	.04	1-9	.04	1-9	.04	1-9	.04
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1964	5-5 1958	.70	5-5 1958	.15	5-5 1958	.16	3-1 1963	.18	3-1 1963	.23	3-1 1963	.23	3-1 1963	.23	3-1 1963	.23
NOTES: Watershed conditions: All cultivated; contour strips with a rotation of corn, small grain and clover. A mulch tillage program is practiced. No crop residue is removed except one clover hay crop each year. 1/ Precipitation obtained from rain gage R-3F. 2/ Determined from continuous records, 1952-64; precipitation and runoff records began January 1952. 3/ Mean P based on 74-yr (1891-1964) U. S. Weather Bureau record period at Blacksburg, Virginia. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
1964 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA WATERSHED W-V 13.04										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-3F			Event of July 21, 1964												
				RG	R-3F											
6-22	.02	.0000	7-21	1335	.00	.00	7-21	1350	.0000	.0000						
6-23	.03	.0000		1338	1.20	.06		1351	.0008	.0000						
7-4	.05	.0000		1339	3.00	.11		1352	.0139	.0001						
7-9	.05	.0000		1342	3.40	.28		1353	.0315	.0005						
7-12	.98	.0000		1345	2.20	.39		1354	.0359	.0011						
7-13	.03	.0000		1347	.60	.41		1355	.0338	.0017						
7-17	.12	.0000		1353	.20	.43		1356	.0315	.0022						
7-18	.02	.0000		1356	.00	.43		1357	.0315	.0027						
7-19	1.29	.0000		1358	.30	.44		1359	.0294	.0037						
7-20	.27	.0000		1415	.00	.44		1400	.0254	.0042						
7-21	4/ .46	.0000		1420	.12	.45		1403	.0139	.0052						
								1404	.0113	.0054						
								1406	.0077	.0057						
								1410	.0011	.0060						
								1411	.0003	.0060						
								1413	.0000	.0060						
Watershed conditions: Contour strips - clover, orchardgrass, meadow stubble 9 to 10 in. high, 32%; corn, clean tilled 8 to 9 ft. high, 25%; oat stubble interplanted with clover and orchardgrass 3 to 4 in. high, 34%; grassed waterway, 9%; all good cover.																
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 6.131. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.3-5. 4/ .43 IN. FROM 1048 TO 1200; .03 IN. FROM 1206 TO 1316.																



BLACKSBURG, VIRGINIA WATERSHED W-V

MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA WATERSHED W-VI AREA—7.70 ACRES									
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	3.19	3.72	2.81	3.63	2.08	1.23	3.97	3.68	2.91	2.45	2.25	2.11	34.03			
1964	.36	.02	.01	.00	.00	T	.00	.00	.00	.00	.00	.00	.39			
STA AVG (52-64)	2.43	3.19	3.44	2.97	3.07	3.21	3.08	3.36	3.04	2.16	2.32	2.78	35.05			
MEAN	.07	.07	.07	.05	.04	.02	.02	.06	.04	.01	.01	.03	.51			
74 YR	3.18	3.10	3.65	3.14	3.68	4.12	4.64	3.95	3.00	2.69	2.38	3.07	40.60			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	1-9	.11	1-9	.06	1-9	.08	1-9	.15	1-9	.16	1-9	.16	1-7	.17	1-7	.17
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1964	5-5 1958	.95	8-8 1958	.27	8-8 1958	.30	5-5 1958	.32	5-5 1958	.35	5-5 1958	.39	5-5 1958	.44	5-5 1958	.46
NOTES: Watershed conditions: All cultivated; contour strips with a rotation of corn, small grain and clover. A mulch tillage program is practiced. No crop residue is removed except one clover hay crop each year. 1/ Precipitation obtained from rain gage R-3F. 2/ Determined from continuous records, 1952-64; precipitation and runoff records began September 1951. 3/ Mean P based on 74-yr (1891-1964) U. S. Weather Bureau record period at Blacksburg, Virginia. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
1964	SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA WATERSHED W-VI						13.05			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-3F			Event of July 21, 1964												
				RG	R-3F											
6-22	.02	.0000	7-21	1335	.00	.00	7-21	1354	.0000	.0000						
6-23	.03	.0000		1338	1.20	.06		1355	.0018	.0018	T					
7-4	.05	.0000		1339	3.00	.11		1356	.0146	.0001						
7-9	.05	.0000		1342	3.40	.28		1357	.0146	.0003						
7-12	.98	.0000		1345	2.20	.39		1358	.0133	.0005						
7-13	.03	.0000		1347	.60	.41		1400	.0099	.0009						
7-17	.12	.0000		1353	.20	.43		1404	.0053	.0014						
7-18	.02	.0000		1356	.00	.43		1406	.0030	.0015						
7-19	1.29	.0000		1358	.30	.44		1408	.0024	.0016						
7-20	.27	.0000		1415	.00	.44		1409	.0024	.0016						
7-21	4/ .46	.0000		1420	.12	.45		1412	.0030	.0017						
								1414	.0030	.0018						
								1416	.0024	.0019						
								1421	.0014	.0021						
								1424	.0009	.0022						
								1428	.0006	.0023						
								1441	.0000	.0023						
Watershed conditions: Contour strips - clover, orchardgrass, meadow stubble 9 to 10 in. high, 29%; corn, clean tilled 8 to 9 ft. high, 22%; oat stubble interplanted with clover and orchardgrass 3 to 4 in. high, 29%; grassed waterway, 20%; all good cover.																
NOTES: TO CONVERT IN/HR TO CFS, MULTIPLY BY 7.764. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.3-5. 4/ .43 IN. FROM 1048 TO 1200 AND .03 IN. FROM 1206 TO 1316.																



BLACKSBURG, VIRGINIA WATERSHED W-VI

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA AREA—3054 ACRES (4.77 SQ. MILES)								THORNE CREEK W-1 13.06		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ¹ / _Q	3.48 .56	3.70 .11	2.73 .21	3.09 .11	1.39 .03	1.27 .02	2.83 .01	2.29 T	3.21 T	2.75 T	2.51 T	1.77 T	31.02 1.05		
STA AV ² / _P (57-64) Q		1.98 .48	2.93 .44	3.68 .79	2.87 .86	3.53 .67	2.47 .38	3.26 .24	3.55 .25	3.76 .16	2.45 .15	2.75 .15	3.01 .27	36.24 4.84		
MEAN P ³ / _{59 YR}		2.92	2.70	3.27	2.77	3.24	3.42	4.22	3.30	2.75	2.71	2.22	2.83	36.35		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	1-9	.03	1-9	.03	1-9	.06	1-9	.12	1-9	.14	1-6	.20	1-6	.21	1-6	.38
MAXIMUMS FOR PERIOD OF RECORD																
1957 to 1964	5-17 1958	.12	5-17 1958	.10	5-17 1958	.18	5-17 1958	.30	5-17 1958	.34	5-17 1958	.38	5-17 1958	.47	3-30 1960	1.09
NOTES: Watershed conditions: Pasture, usually good cover of bluegrass and other native grasses and clovers, 60%; corn, 8%; small grain, 4%; alfalfa and other hay crops, 20%; other cultivated areas, 1%; total cultivated, 33%; farm woods, 4%, idle land, 2%; roads, 1%. 1/ Precipitation Thiessen weighted from R-1, R-2 & R-3. 2/ Determined from continuous records from June, 1957 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 59-yr (1906-64) U.S. Weather Bureau record period at Radford Claytor Dam, changed to Radford 6 WSW, Virginia as of November 1, 1964.																
GEOLOGY: The watershed lies within an area classified as Cambrian, with soils developed from Elbrook dolomite rocks (thick bedded to shaly argillaceous dolomite with some pure limestone), as shown on Geology map of the Appalachian Valley in Virginia by Virginia Geological Survey (1933).																
1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA THORNE CREEK W-1 13.06										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.67M	.03	.00	.00	.00	.59	.00	.00	.00	.73	.00	.00				
2	.00	.00	.11	.10	.00	.08	.12	.00	.00	.07	.00	.00				
3	.00	.00	.05	.38	.00	.03	.01	.20	.00	.00	.00	.00				
4	.00	.00	.00	.00	.00	.00	.00	.01	.00	.40	.00	.00				
5	.00	.04	.39	.00	.00	T	T	.00	.00	.00	.00	.00				
6	.06	.83	.00	.25	.00	T	.00	.00	.00	.00	.00	.00				
7	.07	.00	.00	.24	.00	.07	.00	.16	.00	.00	.00	.00				
8	.00	.00	.34	.30	.00	.17	.05	T	.00	.00	.19	.06				
9	.83	.03S	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00				
10	.01	.19	.09	.00	.00	.00	T	.02	.00	.00	.00	.00				
11	.00	.02	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00				
12	.42S	.00	.00	.00	.06	.00	.68	.12	.00	.00	.00	.34				
13	.22S	.15N	.00	.51	.44	.00	.08	.00	.10	.00	.11	.00				
14	.00	.00	.36	.01	.00	.00	.00	.00	.00	.00	.00	.00				
15	.00	1.37N	.20	.00	.00	.04	.00	.00	.00	.04	.00	.00				
16	.00	.06N	.00	.00	.00	.01	.00	.09	.00	1.45	.00	.00				
17	.00	.00	.00	.00	.00	.00	.30	.00	.00	.01	.00	.00				
18	.00	.68N	.00	.13	.00	.10	.27	.00	.00	.00	.05	.03				
19	.00	T	.00	.32	.00	.01	1.09	.00	.64	.00	.50	.14				
20	.31	.00	.53M	.13	.06	.00	.04	.00	.00	.00	.02	.11				
21	.00	.00	.23M	.00	.00	.00	.01	.00	.00	.00	.00	.00				
22	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00				
23	.00	.00	.00	.00	.01	.17	.01	.00	.00	.00	.00	.00				
24	.66	.00	.00	.00	.05	.00	.01	.00	.00	.00	.10	.00				
25	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.47	.22				
26	.00	.00	.27	.07	.00	.00	.00	.08	.00	.00	.00	.50				
27	.00	.00	.00	.62	.00	.00	.00	.00	.00	.00	.00	.00				
28	.00	.30L	.00	.01	.69	.00	.00	.02	.15	.00	.02	.00				
29	.00	.00	.07S	.00	.08	.00	.06	.09	1.92	.05	.01	.00				
30	.00	-----	.03	.02	.00	.00	.02	1.20	.40	.00	.04	.00				
31	.09	-----	.06S	-----	.00	-----	.00	.19	-----	.00	-----	.00				
TOTAL	3.48	3.70	2.73	3.09	1.39	1.27	2.83	2.29	3.21	2.75	2.51	1.77				
STA AV	1.98	2.93	3.68	2.87	3.53	2.47	3.26	3.55	3.76	2.45	2.75	3.01				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1, R-2, AND R-3. STA AV IS FOR PERIOD JUNE 1957 THROUGH 1964. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, MISC. PUB. 945, P.13.6-5.																

1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA THORNE CREEK W-I							13.06
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.69	.42	.53	.64	.23	.15	.03	.01	T	.00	.00	.00	
2	.45	.36	1.05	.64	.23	.09	.03	.01	.00	.00	.00	.00	
3	.38	.33	1.84	.61	.20	.07	.03	.03	.00	.00	.00	.00	
4	.36	.34	1.15	.59	.19	.07	.03	.03	.00	.00	.00	.00	
5	.32	.32	1.58	.55	.17	.05	.03	.01	.00	.00	.00	.00	
6	7.08	1.43	1.08	.61	.17	.05	.02	.01	.00	.00	.00	.00	
7	19.52	.52	1.01	.68	.17	.06	.02	.04	.00	.00	.00	.00	
8	.52	.41	1.13	.79	.15	.06	.02	.04	.00	.00	.00	.00	
9	19.32	.40	.98	.67	.15	.07	.02	.03	.00	.00	.00	.00	
10	.75	.40	.99	.61	.16	.07	.01	.02	.00	.00	.00	.00	
11	.82	.41	.86	.58	.16	.08	.01	.01	.00	.00	.00	.00	
12	.48	.36	.80	.58	.21	.08	.03	.01	.00	.00	.00	.00	T
13	.57	.34	.76	.66	.25	.09	.01	.01	.00	.00	.00	.00	
14	.48	.30	.86	.68	.15	.10	.01	.01	.00	.00	.00	.00	
15	.41	.56	.92	.56	.16	.10	.01	.01	.00	.00	.00	.00	
16	.29	.76	.75	.37	.15	.10	.01	.01	.00	T	.00	.00	
17	.52	.51	.73	.36	.14	.10	.01	T	.00	.00	.00	.00	
18	.88	.62	.70	.38	.12	.10	.03	T	.00	.00	.00	.00	
19	.88	.49	.69	.40	.12	.10	.18	T	.00	.00	.00	.00	T
20	6.81	.47	.78	.45	.11	.10	.07	T	.00	.00	.00	.00	
21	1.89	.46	.91	.34	.09	.10	.06	T	.00	.00	.00	.00	
22	.97	.44	.82	.32	.08	.09	.06	T	.00	.00	.00	.00	
23	.67	.42	.76	.32	.08	.07	.06	.00	.00	.00	.00	.00	
24	1.56	.40	.76	.29	.10	.07	.05	.00	.00	.00	.00	.00	
25	2.06	.42	.76	.27	.09	.06	.04	.00	.00	.00	T	.00	
26	.85	.44	.85	.28	.10	.04	.04	.00	.00	.00	.00	.00	T
27	.68	.44	.73	.39	.11	.04	.03	.00	.00	.00	.00	.00	
28	.46	.46	.70	.34	.12	.03	.03	.00	.00	.00	.00	.00	
29	.48	.48	.65	.27	.12	.03	.03	T	.00	.00	.00	.00	
30	.40	-----	.66	.24	.08	.03	.02	.01	.00	.00	.00	.00	
31	.40	-----	.73	-----	.07	-----	.01	.01	-----	.00	-----	.00	
MEAN	2.32	.47	.89	.48	.14	.07	.03	.01	T	T	T	T	T
INCHES	.56	.11	.21	.11	.03	.02	.01	T	T	T	T	T	T

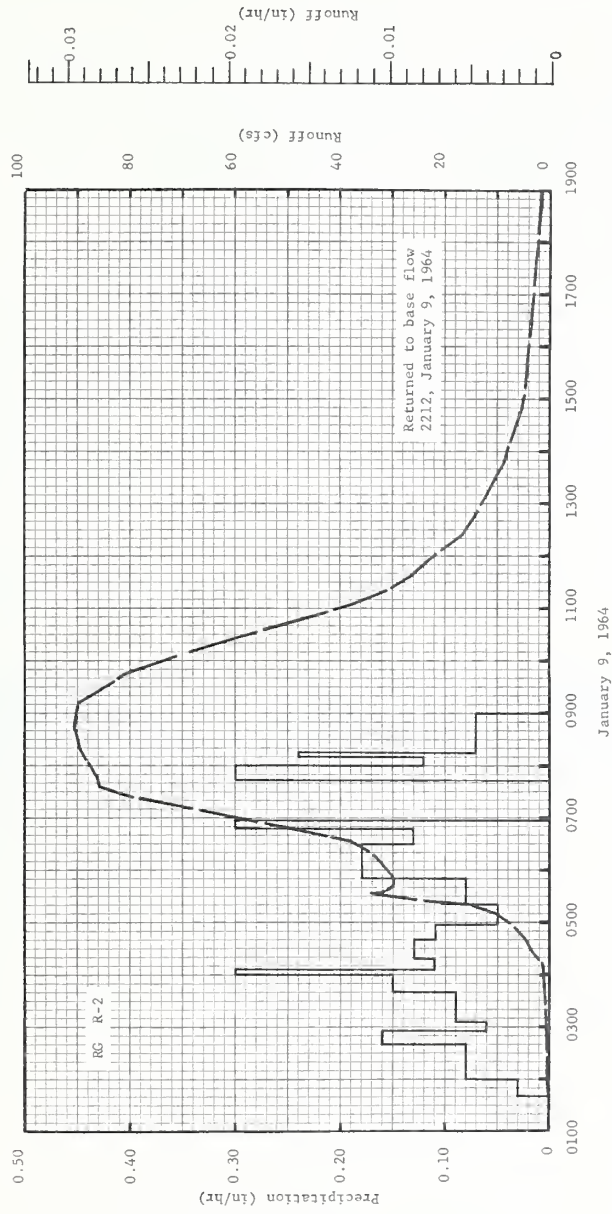
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.0077935.

1964			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				THORNE CREEK W-I				13.06	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of January 9, 1964																
1 - 9	BRG 1/ .00	2/ .0002	1 - 9	RG	R-2		1 - 9	0140	.3079	.0000						
				0140	.00	.00					0220	.3387	.0001			
				0200	.03	.01					0300	.4311	.0001			
				0240	.08	.06					0324	.5543	.0002			
				0255	.16	.10					0340	.8623	.0003			
				0305	.06	.11										
				0340	.09	.16					0356	1.0470	.0003			
				0400	.15	.21					0414	1.2934	.0005			
				0406	.30	.24					0424	2.3712	.0006			
				0417	.11	.26					0444	4.7732	.0009			
				0440	.13	.31					0500	7.9759	.0015			
				0457	.11	.34					0508	9.9467	.0019			
				0520	.05	.36					0520	15.2126	.0027			
				0550	.08	.40					0524	22.4802	.0031			
				0630	.18	.52					0532	34.4502	.0043			
				0649	.13	.56					0536	31.4107	.0051			
				0657	.30	.60					0544	29.5630	.0064			
				0754	.00	.60					0552	30.2713	.0077			
				0800	.30	.63					0608	32.3346	.0104			
				0810	.12	.65					0628	36.0515	.0141			
0815	.24	.67	0636	39.8793	.0157											
1 - 9				RG	R-3			0648	48.2863	.0186						
				0705	.63.6837	.0246										
				0724	78.7115	.0308										
				0736	85.8251	.0361										
				0744	86.0407	.0399										
				0808	88.2887	.0312										
				0820	89.4569	.0370										
				0844	90.5983	.0686										
				0912	89.7977	.0823										
				0920	87.5189	.0662										

1964			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				THORNE CREEK W-I		13.06		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)					
Event of January 9, 1964 - Continued															
				RG	R-3										
			1-9	0425	.16	.35	1-9	0946	81.2059	.0980					
				0445	.12	.39		1008	70.3661	.1070					
				0500	.08	.41		1048	47.8551	.1198					
				0530	.06	.44		1108	37.0154	.1244					
				0540	.12	.46		1124	30.0865	.1273					
				0608	.24	.57		1140	26.4527	.1298					
				0615	.17	.59		1156	22.9113	.1319					
				0622	.26	.62		1224	17.0911	.1350					
				0633	.16	.65		1240	14.9663	.1364					
				0645	.10	.67		1344	8.4070	.1404					
				0700	.12	.70		1420	6.6209	.1419					
				0735	.02	.71		1444	5.6970	.1427					
				0755	.21	.78		1528	4.6808	.1439					
				0807	.20	.82		1720	2.7099	.1461					
				0831	.02	.83		1800	2.4020	.1467					
				RG	R-1	.77		1828	2.1556	.1470					
			3 RG	AVG 1/	.79			1840	1.9401	.1472					
								1848	1.9401	.1473					
								1908	2.1248	.1475					
								1940	1.9401	.1478					
								2016	1.8477	.1482					
								2100	1.8169	.1486					
								2212	2/1.8169	.1493					

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0003247. 1/ THIessen WEIGHTED FOR RG R-1, R-2 AND R-3. 2/ NORMAL BASE FLOW.

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0003247. 1/ THIESSEN WEIGHTED FOR RG R-1, R-2 AND R-3. 2/ NORMAL BASE FLOW.



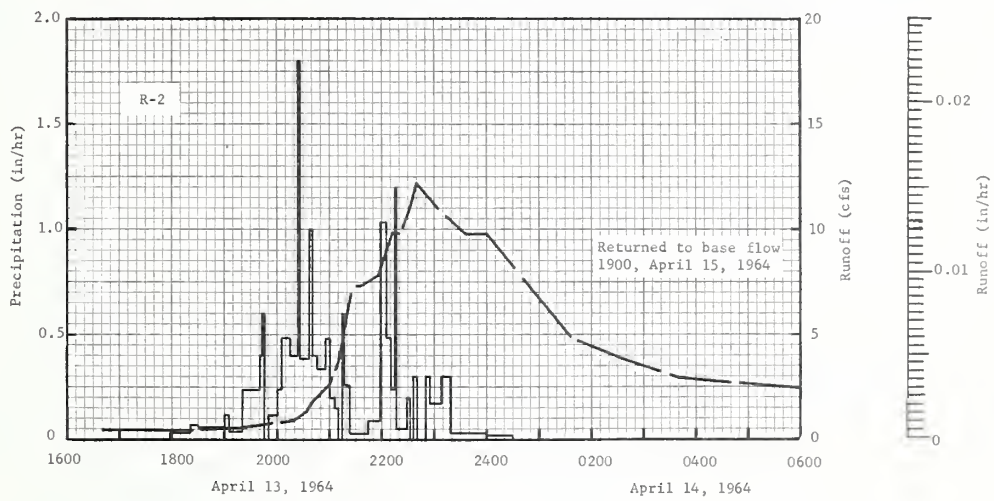
BLACKSBURG, VIRGINIA THORNE CREEK W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA								CRAB CREEK W-I 13.07											
						AREA—786 ACRES (1.23 SQ. MILES)																			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL											
1964	P 1/	3.57	3.51	2.30	3.99	1.92	1.72	4.64	3.14	2.49	1.88	2.34	2.45	33.95											
	Q	1.35	.39	.57	.61	.25	.17	.18	.13	.12	.13	.12	.18	4.20											
	STA AVG 2/P (57-64) O	2.01	2.88	3.39	2.77	2.98	2.47	3.85	2.76	3.14	2.37	2.71	2.98	34.31											
MEAN 3/		.82	.80	1.32	1.13	.72	.36	.32	.31	.25	.26	.30	.57	7.16											
74 YR		3.18	3.10	3.65	3.14	3.68	4.12	4.64	3.95	3.00	2.69	2.38	3.07	40.60											
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																									
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																						
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS										
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME									
1964	1-7	.07	1-7	.06	1-7	.11	1-7	.20	1-6	.32	1-6	.44	1-6	.47	1-3	.85									
MAXIMUMS FOR PERIOD OF RECORD																									
1957 TO 1964	8-25 1961	.17	4-3 1960	.13	4-3 1960	.22	4-3 1960	.32	4-3 1960	.42	4-3 1960	.52	4-3 1960	.73	3-27 1960	1.76									
NOTES: Watershed conditions: Cultivated, alfalfa and other hay crops - 19%; corn - 4%; small grain - 14%; total cultivated - 37%; permanent pasture, usually good cover of native bluegrass combined with other grasses and clovers - 47%; farm woods, hardwood predominantly - 13%; idle land - 2%; paved roads - 1%. R-3 rain gage installed November 9, 1964 and R-4 rain gage installed November 12, 1964. 1/ Precipitation Thiessen weighted from R-1, R-2, R-3 and R-4. 2/ Determined from continuous records from August, 1957 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 74-yr (1891-1964) U. S. Weather Bureau record period at Blacksburg, Virginia. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																									
GEOLOGY: The watershed lies about evenly divided between areas classified as Canadian (Beekmantown dolomite) and Ozarkian (Conococheague limestone) formations with a small part in the Cambrian (Elbrook dolomite) formation, as shown on the Geology map of the Appalachian Valley in Virginia by Virginia Geological Survey (1933).																									
1964 DAILY AIR TEMPERATURE (degrees F)						BLACKSBURG, VIRGINIA CRAB CREEK W-I 13.07																			
OAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	34	21	44	32	45	24	42	22	63	49	62	57	84	55	80	64	76	50	56	52	61	30	22	12	
2	41	22	39	30	52	36	59	25	50	47	60	50	86	60	84	64	75	47	70	54	62	31	38	13	
3	48	31	45	21	58	39	60	37	58	44	69	44	88	60	88	67	80	52	66	52	63	28	54	35	
4	44	30	48	17	64	42	48	30	68	52	73	39	78	60	68	60	83	54	62	50	66	30	61	45	
5	45	22	56	21	64	35	44	35	72	43	74	48	78	49	80	62	82	55	50	39	64	34	55	34	
6	45	20	42	36	53	30	52	36	71	44	77	57	82	46	81	60	76	46	51	30	60	37	33	19	
7	46	28	44	30	54	32	72	46	76	46	74	56	88	49	81	59	76	49	54	28	58	27	35	17	
8	36	30	34	21	50	34	58	35	83	51	79	58	83	60	77	62	77	46	56	28	50	35	41	14	
9	42	31	42	22	70	43	48	31	80	60	87	60	84	60	80	54	79	50	61	31	58	40	41	24	
10	32	18	42	30	62	32	57	30	76	57	86	64	84	57	81	65	79	50	48	27	66	33	42	22	
11	40	11	34	20	51	30	62	29	79	50	81	59	83	56	78	62	83	62	59	24	69	34	54	35	
12	28	17	40	15	49	26	59	38	75	58	77	56	72	61	79	56	67	54	64	36	67	35	60	38	
13	24	13	41	28	52	21	60	49	69	52	83	66	76	58	68	48	55	42	68	31	68	47	58	35	
14	21	10	38	22	52	30	66	50	57	50	84	66	80	54	68	45	69	41	65	36	66	32	41	27	
15	32	10	33	22	50	36	56	40	72	49	85	64	84	52	69	39	72	36	55	45	69	32	32	16	
16	37	8	36	28	55	35	65	30	78	42	75	52	87	54	62	55	75	39	57	49	68	46	42	15	
17	36	20	42	18	56	28	77	39	79	47	80	46	81	61	78	55	78	45	61	51	62	54	47	26	
18	47	19	34	26	42	22	76	51	78	50	79	59	76	63	76	52	72	56	71	51	56	52	41	70	
19	45	22	35	29	48	20	78	48	84	45	88	62	71	67	77	51	64	61	54	40	62	48	33	30	
20	42	35	32	25	38	28	79	56	81	55	90	64	81	63	82	47	68	59	47	27	60	33	38	26	
21	54	33	28	20	43	30	77	48	73	53	92	64	77	62	82	54	64	52	62	25	36	21	34	31	
22	60	26	28	14	42	27	74	48	83	50	87	64	82	65	85	61	76	47	60	34	37	13	45	30	
23	61	31	34	13	54	24	74	52	82	53	90	63	84	65	80	64	77	58	49	28	51	14	44	29	
24	51	28	40	18	64	30	70	54	80	60	81	64	84	64	81	57	68	51	54	23	49	23	68	33	
25	54	33	34	19	61	40	58	48	74	48	82	57	77	64	85	58	65	40	63	27	55	41	63	52	
26	47	30	44	20	60	30	49	43	80	42	82	54	82	62	83	57	67	35	66	29	55	37	64	54	
27	53	32	36	22	49	27	54	47	74	57	88	53	82	62	78	55	76	48	66	31	61	40	54	37	
28	39	18	33	24	60	26	74	52	66	52	84	55	86	62	78	63	74	56	68	33	54	41	42	29	
29	40	14	40	23	42	26	71	51	62	45	83	49	87	66	75	61	66	57	64	46	48	29	53	25	
30	47	22	---	---	26	15	66	50	64	41	87	54	80	58	76	67	68	56	60	37	33	15	56	30	
31	36	22	---	---	40	16	---	---	70	49	---	---	76	56	79	64	---	---	59	34	---	---	---	27	12
AV.	42	22	38	22	51	29	62	41	72	49	80	56	81	59	78	57	72	49	59	36	57	33	45	29	
MEAN	34.5		34.5		42.5		50.5		62.5		65.5		67.0		63.5		59.0		47.0		41.0		40.0		
STA AV	43	24	44	24	53	31	63	39	72	47	79	56	82	59	81	58	76	51	66	40	54	31	44	25	
NOTES: TEMPERATURE DATA FROM VIRGINIA POLYTECHNIC INSTITUTE AGRICULTURAL ENGINEERING FARM, NEAR PRICES FORK, VIRGINIA, APPROXIMATELY 10 MILES N. W. OF WATERSHED. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE PAGE 13.7-5.																									

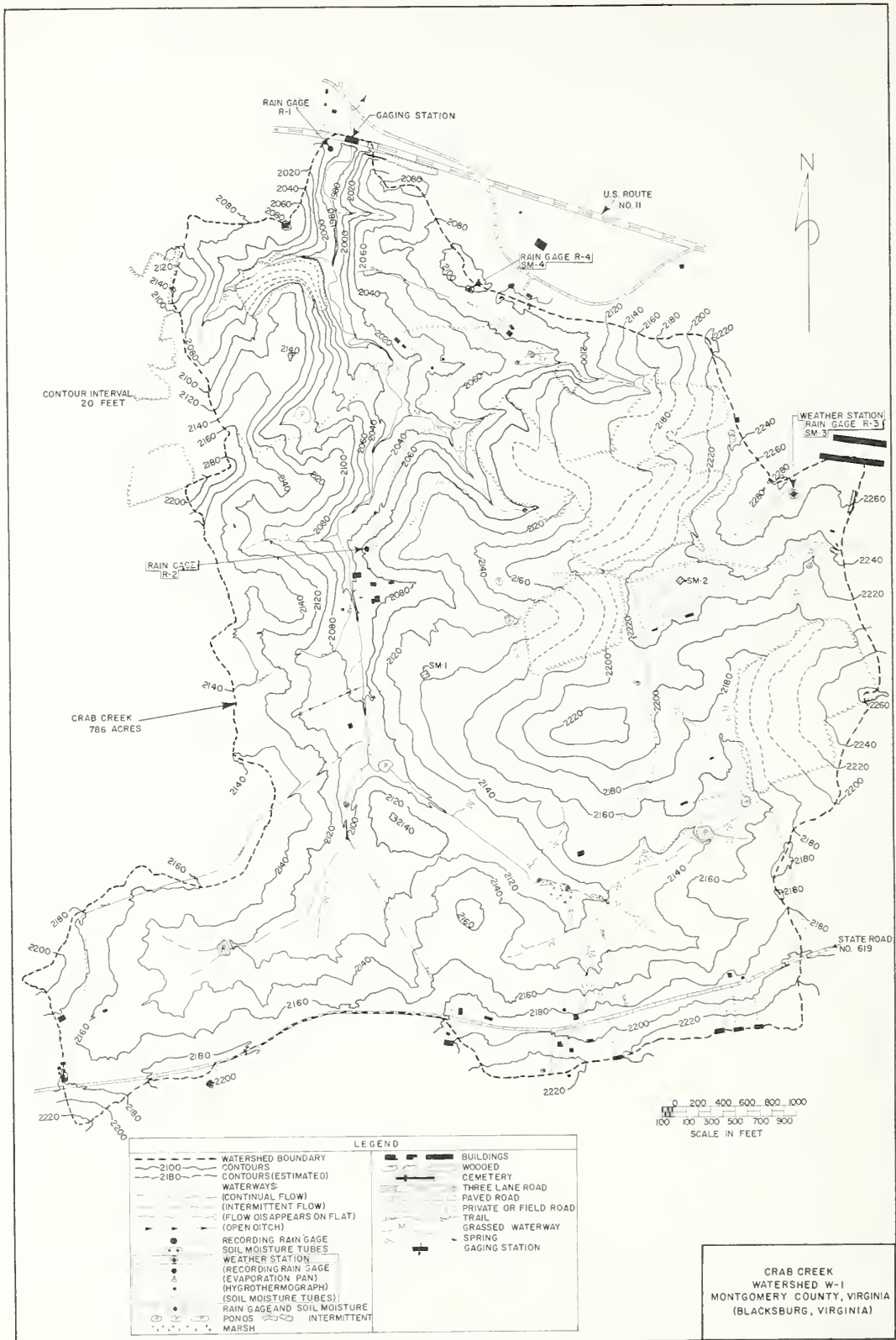
1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA						
						CRAB CREEK W-1 13.07						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.76M	.01	.00	.00	.00	.35	.00	.00	.00	.54	.00	.00
2	.00	.00	.10	.11	.00	.24	.38	.15	.00	.07	.00	.00
3	.00	.00	.02	.74	.00	T	.00	.53	.00	T	.00	.00
4	.00	.00	.01	.00	.00	.00	T	.00	.00	.55	.00	.21
5	.00	.03	.06	.00	.00	.00	.00	.00	.00	.00	.00	.08
6	.05	.83	.00	.24	.00	.00	.00	.00	.00	.00	.00	.00
7	.27	.00	.00	.27	.00	.07	.00	.00	.00	.00	.00	.00
8	.00	.00	.21	.40	.00	.00	.02	.00	.00	.00	.32	.04S
9	.59	.03S	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01S
10	T	.13	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.39S	.00	.00	.00	.38	.00	.83	.08	.00	.00	.00	.51
13	.19S	.05N	.00	1.28	.47	.00	.15	.00	.20	.00	.03	.00
14	.00	T	.46	.01	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	1.24N	.22	.00	.00	.00	.00	.00	.00	.06	.00	.00
16	.00	.12	.00	.00	.00	.00	.00	.07	.00	.66	.00	.00
17	.00	.00	.00	.00	.00	.00	.29	.00	.00	.00	.00	.00
18	.00	.67S	.00	.08	.00	.38	.03	.00	.00	.00	.01	T
19	.00	.06S	.00	.27	.00	.05	1.64	.00	.74	.00	.52	.10M
20	.35	.00	.52M	.19	.00	.00	.08	.00	T	.00	.22	.14M
21	.00	.00	.27M	.00	.00	.00	.39	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.06	.17	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.01	.57	.00	.00	.00	.00	.00	.00
24	.68	.00	.00	.00	.05	.00	.02	.00	.00	.00	.04	.01
25	.21	.00	.00	.00	.01	.00	.00	.00	.00	.00	1.12	.14
26	.00	.00	.24	.10	.00	.00	.00	.00	.00	.00	.00	.99
27	.00	.00	.00	.22	.00	.00	.00	.00	.00	.00	.00	.14
28	.00	.25S	.00	.00	.92	.00	.00	.00	.20	.00	.00	.00
29	.00	T	.05S	.04	.08	.00	.59	.11	1.14	T	.00	.00
30	.00	-----	.02S	.04	.00	.00	.05	1.84	.21	.00	.08S	.00
31	.08	-----	.03S	-----	.00	-----	.00	.36	-----	.00	-----	.00
TOTAL	3.57	3.51	2.30	3.99	1.92	1.72	4.64	3.14	2.49	1.88	2.34	2.45
STA AV	2.01	2.88	3.39	2.77	2.98	2.47	3.85	2.76	3.14	2.37	2.71	2.98
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1, R-2, R-3, AND R-4. STA AV IS FOR PERIOD AUGUST 1957 THROUGH 1964.												
1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA						
						CRAB CREEK W-1 13.07						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.70	.27	.52	.33	.34	.23	.16	.15	.13	.28	.11	.12
2	.71	.26	1.30	.35	.34	.26	.17	.15	.12	.18	.11	.11
3	.61	.23	1.95	.57	.34	.22	.16	.21	.11	.17	.11	.16
4	4.16	.21	1.20	.53	.32	.19	.15	.18	.11	.26	.11	.16
5	1.24	.20	1.04	.41	.30	.19	.16	.15	.11	.18	.11	.14
6	4.33	1.25	.67	.50	.30	.19	.16	.15	.11	.14	.11	.14
7	11.19	.48	.59	.64	.30	.19	.16	.15	.11	.13	.11	.12
8	.54	.35	.64	1.08	.28	.19	.16	.14	.12	.13	.14	.11
9	5.28	.28	.61	.77	.25	.19	.16	.12	.12	.13	.13	.11
10	.56	.31	.56	.62	.25	.19	.16	.13	.12	.13	.13	.11
11	.31	.37	.45	.53	.24	.19	.16	.12	.12	.13	.12	.11
12	.26	.30	.41	.50	.32	.19	.27	.12	.12	.13	.11	.25
13	.24	.28	.39	1.64	.40	.19	.23	.00	.15	.13	.11	.18
14	.19	.26	.49	2.36	.29	.19	.19	.25	.16	.12	.11	.14
15	.19	.41	.76	1.10	.25	.18	.19	.12	.16	.11	.11	.13
16	.19	.93	.51	.82	.24	.16	.19	.12	.15	.18	.11	.13
17	.19	.68	.44	.68	.22	.16	.20	.12	.12	.19	.11	.13
18	.43	.64	.39	.63	.22	.16	.20	.12	.14	.14	.11	.13
19	.22	.63	.38	.63	.22	.21	.50	.12	.22	.13	.15	.12
20	6.03	.51	.45	.83	.22	.16	.25	.12	.16	.13	.17	.11
21	1.18	.48	.69	.58	.22	.16	.22	.12	.13	.13	.13	.11
22	.64	.37	.62	.56	.22	.16	.21	.12	.13	.12	.12	.11
23	.68	.33	.53	.52	.22	.33	.18	.12	.13	.11	.11	.11
24	1.1	.34	.48	.49	.22	.22	.16	.12	.12	.11	.11	.11
25	2.10	.33	.48	.44	.20	.10	.15	.12	.11	.11	.45	.13
26	.65	.52	.57	.45	.19	.16	.15	.11	.11	.11	.19	.72
27	.51	.60	.39	.50	.19	.16	.15	.11	.11	.11	.14	.74
28	.38	.57	.35	.43	.28	.15	.14	.11	.11	.11	.11	.41
29	.30	.46	.35	.38	.29	.16	.24	.12	.27	.11	.12	.31
30	.30	-----	.39	.37	.21	.16	.17	.28	.21	.11	.13	.26
31	.30	-----	.38	-----	.19	-----	.15	.54	-----	.11	-----	.24
MEAN	1.44	.44	.61	.67	.26	.19	.19	.14	.14	.14	.13	.19
INCHES	1.35	.39	.57	.61	.25	.17	.18	.13	.12	.13	.12	.18
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.030282.												

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				CRAB CREEK W-1 13.07			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of April 13, 14 and 15, 1964										
4-13	RG R-1 1/.11	2/.0113	4-13	RG 1757	R-2 .00	.00	4-13	1640	.4993	.0000
				1821	.03	.01		1820	.4993	.0011
				1830	.07	.02		1904	.5627	.0015
4-13	RG R-2 3/.12			1900	.06	.05		1916	.5627	.0017
				1905	.12	.06		2004	.7846	.0024
				1920	.04	.07		2020	.9590	.0026
				1930	.24	.11		2034	1.3870	.0030
				1935	.24	.13		2040	1.7436	.0032
				1940	.24	.15		2050	2.2429	.0036
				1943	.40	.17		2100	2.5837	.0041
				1945	.60	.19		2111	3.7725	.0049
				1950	.00	.19		2116	5.1278	.0053
				2000	.12	.21		2124	6.9031	.0063
				2005	.24	.23		2132	7.3073	.0075
				2015	.48	.31		2136	7.2994	.0082
				2024	.40	.37		2156	7.8066	.0113
				2026	1.80	.43		2212	9.8355	.0143
				2037	.38	.50		2220	9.8276	.0160
				2040	1.00	.55		2232	11.0402	.0186
				2046	.40	.59		2240	12.2053	.0205
				2055	.33	.64		2304	10.9847	.0264
				2100	.48	.68		2336	9.8038	.0334
				2106	.20	.70		2400	9.7959	.0383
				2110	.15	.71	4-14	0136	4.9138	.0532
				2114	.00	.71		0236	3.7882	.0587
				2116	.60	.73		0340	2.9957	.0632
				2123	.26	.76		0528	2.5123	.0695
				2145	.03	.77		0728	2.1874	.0754
				2158	.09	.79		1300	1.7911	.0893
				2205	1.03	.91		1740	1.4186	.0988
				2210	.48	.95		2400	1.3156	.1097
				2215	.24	.97	4-15	0148	1.3156	.1127
				2216	1.20	.99		1900	4/.9272	.1370
				2229	.05	1.00				
				2232	.20	1.01				
				2236	.00	1.01				
				2240	.30	1.03				
				2250	.00	1.03				
				2254	.30	1.05				
				2308	.17	1.09				
			4-14	2318	.30	1.14				
				2400	.03	1.16				
				0030	.02	1.17				
				RG	R-1	1.14				
				2 RG	AVG 5/	1.17				
Watershed conditions: Pasture native grasses, beginning to green, very little new growth, fair cover, 55%; small grain, new spring growth started 1½-3 in. tall, poor to fair cover, 14%; alfalfa and other hay crops, 2 to 3 in., tall, 15%; woods, mostly hardwood, setting new buds, good cover, 13%; idle, mostly dormant growth of weeds, grass and vines 2%; paved roads, 1%.										

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0012618. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON PREVIOUS PAGE. 1/ .11 IN. FROM 0200 TO .0900. 2/ CONTINUOUS FLOW PRIOR TO 1640. 3/ .12 IN FROM 0215 TO 0930. 4/ NORMAL BASE FLOW. 5/ THIESSEN WEIGHTED FOR RG R-1 AND R-2.



BLACKSBURG, VIRGINIA CRAB CREEK W-I



MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA BRUSH CREEK W-I 13.08 AREA—893 ACRES (1.40 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	3.59 2.30	3.63 1.47	2.16 2.06	3.96 1.70	2.18 1.02	2.24 .65	4.35 .65	5.83 .89	2.28 .62	3.09 1.08	2.55 .98	2.44 1.24	38.30 14.66			
STA AVG ^{2/} (57-64) _Q	2.14	3.22	3.35	3.12	3.48	2.47	3.58	3.97	4.25	2.62	2.92	3.17	38.29			
MEAN _{P3/} 74 YR	1.90	2.12	2.64	2.23	1.76	1.07	.97	1.00	1.41	1.35	1.41	1.84	19.70			
	3.18	3.10	3.65	3.14	3.68	4.12	4.64	3.95	3.00	2.69	2.38	3.07	40.60			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-31	.04	8-31	.04	8-31	.08	8-31	.18	8-31	.30	8-30	.45	3-2	.50	3-2	.98
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1964	9-30 1959	1.16	9-30 1959	.62	9-30 1959	.91	9-30 1959	1.62	9-30 1959	2.17	9-29 1959	2.59	9-29 1959	2.81	9-29 1959	3.23
NOTES: Watershed conditions: Permanent pasture, usually a fair cover of native grasses - 32%; farm woods, a mixture of hardwoods and conifers - 32%; cultivated corn - 4%; small grain - 4%; alfalfa & other hay crops - 20%; total cultivated-28%. Idle land - 6%; roads - 2%. 1/ Precipitation Thiessen weighted from R-1 & R-2. 2/ Determined from continuous records from August, 1957 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 74-yr (1891-1964) U.S. Weather Bureau record period at Blacksburg, Va. Missing records for 11 months were estimated from nearby Weather Bureau records at Christiansburg, Va. and Va. Agr. Expt. Sta. at Blacksburg, Va.																
WATERSHED DESCRIPTION																
SLOPES: (Revision)		Slope-Percent		0-2	2-7	7-15	15-25	25-45	45+							
		Percent of Area		12	3	43	27	13	2							
SOILS: (Revision) Final correlation:																
Type	Parent Material															
Brandywine	Residium from granite gneiss which is high in dark colored minerals.															
Chester-Glenelg and Watauga	Developed from Lynchburg gneiss and schists.															
Drenn and Porter series	Developed from Lynchburg gneiss and granite gneiss. Has low water holding capacity.															
Edneyville and Louisburg series	Developed from light colored crystalline rock, high in quartz and feldspar in the Lynchburg formation.															
Elioak	Developed from Lynchburg mica gneiss and schists, (formerly called Fannin).															
Tusquitee	Developed in colluvial deposits from Lynchburg gneiss, schists and granite gneiss.															
Type	Percent of area	Avg. depth (in.)	Topsoil Structure	Permeability	Subsoil Structure	Permeability	Substratum Avg. depth to (in.)	Permeability	Internal drainage							
Chester-Glenelg loam	27	7	Moderate fine granular	Rapid	Moderate fine and medium subangular blocky	Moderate	18 to 40	Moderately rapid	Medium							
Edneyville fine sandy loam	18	7	Weak fine granular	Rapid	Moderate medium subangular blocky	Moderate	30	Moderate to slow	Medium							
Mixed alluvial land	12	-	-----	-----	-----	-----	--	-----	Very slow							
Brandywine loam	12	6	Weak fine granular	Rapid	Weak fine granular	Rapid	26	Rapid to slow	Rapid							
Louisburg-Edneyville fine sandy loam	9	6	Weak fine granular	Rapid	Weak fine subangular blocky	Rapid	22	Rapid	Rapid							
Tusquitee loam	6	8	Weak fine granular	Moderately rapid	Moderate medium subangular blocky	Moderately rapid	33	Moderately rapid	Medium							
Porters loam	4	7	Weak fine granular	Rapid	Weak fine subangular blocky	Moderately rapid	28	Moderately rapid	Rapid							
Watauga silt loam	5	7	Weak fine granular	Moderately rapid	Moderate medium subangular blocky	Moderate	36	Moderately rapid	Medium							
Drenn very stony loam	3	7	Weak fine granular	Rapid	Weak fine subangular blocky	Rapid	15	Rapid	Rapid id							
Elioak silt loam	2	7	Moderate fine granular	Moderately rapid	Moderate medium subangular blocky	Moderate	48	Moderately rapid	Medium							
Louisburg-Edneyville thin solum cobbly fine sandy loam	2	5	Weak fine granular	Rapid	Weak fine subangular blocky	Moderate to rapid	16	Rapid to slow	Medium to rapid							

WATERSHED DESCRIPTION--CONTINUED

EROSION: (Revision)

Erosion class	1	2
Percent of area	81	19

LAND CAPABILITY: (Revision)

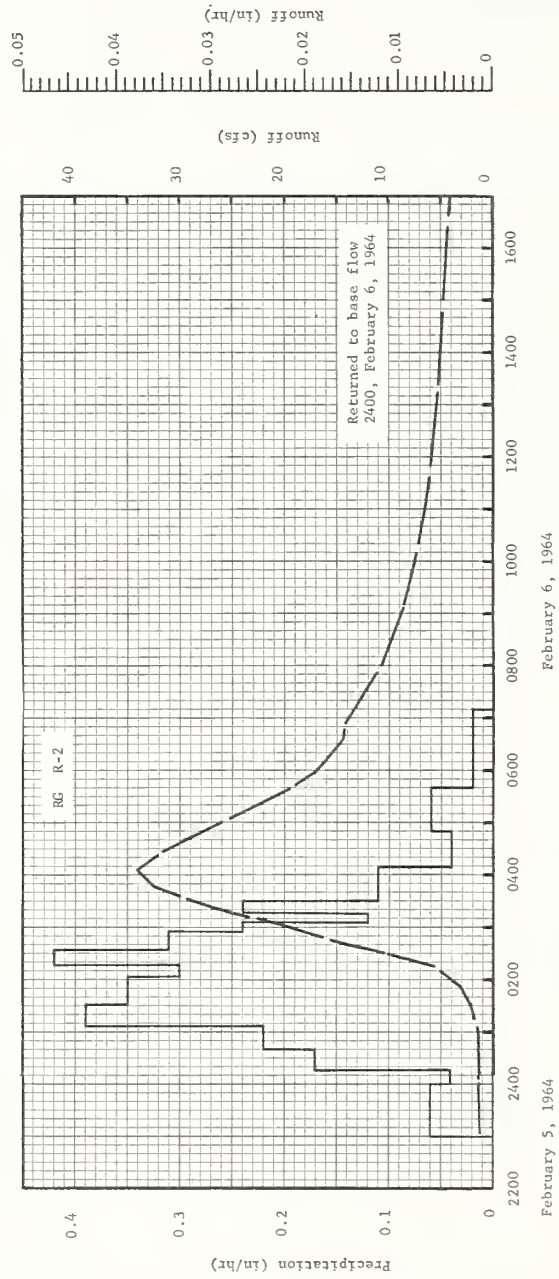
Class	I	II	III	IV	V	VI	VII	VIII
Percent of area	0	4	33	26	0	28	9	0

GEOLOGY: The soils have developed in an area classified as undifferentiated Precambrian rocks, gneisses and igneous rock by 1928 State Geology map.

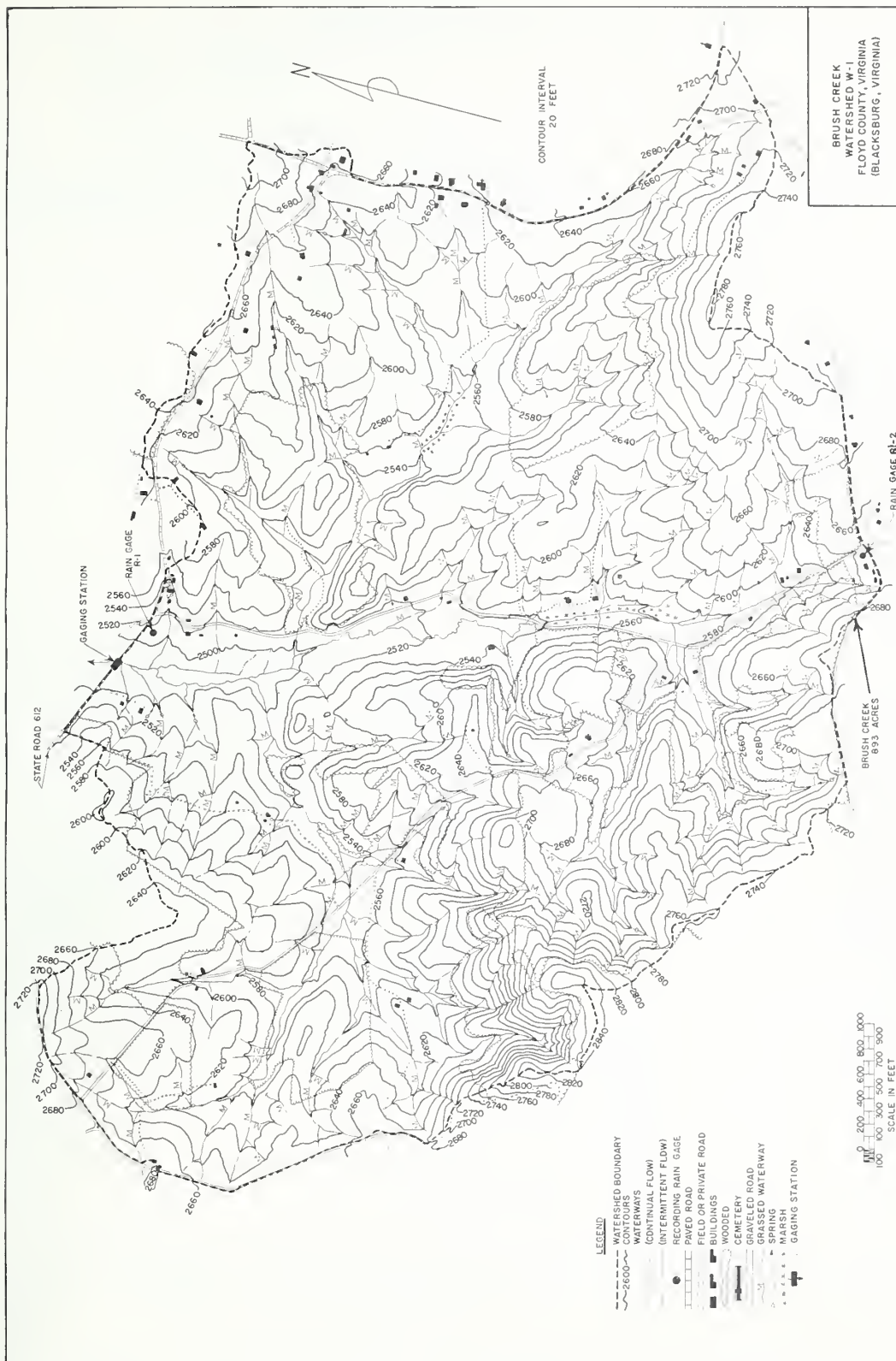
1964	DAILY PRECIPITATION (inches)					BLACKSBURG, VIRGINIA				BRUSH CREEK W-1	13.08	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.01M	.06	.00	.00	.01	.21	.00	.00	.00	.30	.00	.00
2	.00	.00	.19	.05	.03	.31	.00	.11	.00	.31	.00	.03
3	.00	.00	.02	.68	.14	.00	.00	.43	.00	.01	.00	.17
4	.00	.00	.01	.00	.00	.00	.11	.07	.00	.88	.00	.10
5	.00	.06	.17	.00	.00	.00	.00	.00	.00	.00	.00	.16
6	.03	1.10	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00
7	.26	.00	.00	.23	.00	.00	.00	.00	.00	.00	.00	.00
8	.01	.00	.02	.32	.00	.00	.02	.00	.00	.00	.09	.04
9	.46	.03	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00
10	.00	.10	.10	.00	.00	.00	.02	.00	.00	.00	.00	.00
11	.00	.06	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00
12	.30S	.00	.00	.00	.51	.00	1.30	.07	.00	.00	.00	.41
13	.20S	.00	.00	.64	.65	.00	.15	.00	.19	.00	.03	.00
14	.00	.00	.39	.57	.00	.00	.02	.00	.00	.00	.00	.00
15	.00	.93N	.18	.00	.00	.13	.00	.00	.00	.06	.00	.00
16	.00	.11N	.00	.00	.01	.00	.00	.05	.00	1.49	.00	.00
17	.00	.00	.00	.00	.00	.00	.50	.00	.00	.04	.00	.00
18	.00	.86S	.00	.03	.00	.93	.04	.02	.00	.00	.05	.01
19	.00	.04S	.00	.17	.00	.04	1.33	.00	.49	.00	.41	.12
20	.40	.00	.48M	.20	.00	.00	.03	.00	.06	.00	.09	.29
21	.00	.00	.27M	.00	.00	.00	.05	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.62	.16	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.01	.00	.03	.00	.00	.00	.00	.00
24	.65	.00	.00	.00	.02	.00	.00	.00	.00	.00	.09	.00
25	.13	.03S	.00	.00	.03	.00	.00	.00	.00	.00	1.79	.12
26	.00	.00	.25	.09	.00	.00	.00	.00	.00	.00	.00	.78
27	.00	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.21
28	.00	.25S	.00	.02	.57	.00	.00	.05	.12	.00	.00	.00
29	.00	.00	.03S	.22	.18	.00	.48	.05	1.02	.00	.00	.00
30	.00	-----	.02S	.14	.00	.00	.07	2.77	.37	.00	.00	.00
31	.14	-----	.03S	-----	.02	-----	.00	2.21	-----	.00	-----	.00
TOTAL	3.59	3.63	2.16	3.96	2.18	2.24	4.35	5.83	2.28	3.09	2.55	2.44
STA AV	2.14	3.22	3.35	3.12	3.48	2.47	3.58	3.97	4.25	2.62	2.92	3.17

NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1 AND R-2. STA AV IS FOR PERIOD AUGUST 1957 THROUGH 1964. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE PAGE 13.8-5.

1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA		BRUSH CREEK W-1		13.08			
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.79	1.72	1.71	1.48	1.58	1.06	.48	.61	1.53	1.76	.92	1.06	
2	1.20	1.33	5.41	1.48	1.58	1.67	.47	.62	1.01	1.64	.92	1.19	
3	.70	1.24	11.46	2.69	1.74	1.11	.47	.95	.83	1.01	.92	1.72	
4	.70	1.14	5.13	2.20	1.51	.90	.59	.96	.74	3.24	.92	1.52	
5	.70	1.16	5.28	1.72	1.35	.82	.49	.70	.69	1.63	.88	1.46	
6	2.99	8.51	2.80	2.23	1.30	.79	.47	.62	.64	1.15	.85	1.34	
7	14.38	2.62	2.25	2.61	1.29	.81	.52	.58	.61	1.00	.85	1.21	
8	2.39	1.85	2.09	3.42	1.23	.81	.49	.57	.61	.89	.91	1.15	
9	8.46	1.51	2.00	2.31	1.17	.73	.46	.50	.61	.85	.89	1.16	
10	2.73	1.50	1.97	1.93	1.08	.70	.42	.52	.61	.81	.65	1.15	
11	1.53	1.74	1.62	1.74	1.04	.65	.41	.56	.59	.79	.85	1.14	
12	1.32	1.53	1.54	1.60	1.78	.63	2.06	.58	.58	.82	.85	2.11	
13	1.17	1.39	1.44	2.31	2.84	.61	1.15	.54	.73	.82	.85	1.45	
14	1.10	1.35	1.85	6.94	1.61	.61	.64	.50	.64	.81	.81	1.29	
15	1.03	1.92	2.88	2.77	1.29	.63	.54	.47	.57	.82	.79	1.23	
16	.99	2.70	1.81	2.14	1.16	.64	.49	.56	.55	4.52	.79	1.15	
17	1.02	1.94	1.62	1.88	1.07	.62	.72	.52	.55	2.86	.78	1.13	
18	1.39	2.49	1.47	1.73	1.00	.67	.79	.47	.57	1.48	.78	1.02	
19	1.39	2.29	1.42	1.86	.95	2.44	3.25	.44	1.08	1.27	1.35	.90	
20	8.86	1.89	1.90	2.26	.90	.71	1.19	.40	.79	1.18	1.24	1.74	
21	2.86	1.58	2.89	1.67	.87	.62	.89	.40	.74	1.14	.90	1.36	
22	2.35	1.39	2.18	1.59	.87	1.36	.87	.39	.66	1.11	.83	1.27	
23	2.36	1.40	1.84	1.49	.86	.86	1.00	.40	.63	1.06	.83	1.21	
24	4.67	1.35	1.68	1.45	.85	.71	.70	.39	.59	1.06	.90	1.21	
25	9.27	1.35	1.63	1.40	.84	.63	.63	.37	.58	1.05	8.10	1.32	
26	2.79	1.35	2.13	1.45	.77	.61	.62	.34	.57	.99	2.20	3.65	
27	2.05	1.35	1.50	1.90	.82	.56	.57	.40	.57	.99	1.48	3.28	
28	1.62	1.77	1.46	1.82	1.41	.54	.54	.42	.67	.99	1.29	2.24	
29	1.34	1.76	1.40	1.72	1.51	.52	1.04	.49	2.01	.96	1.17	1.77	
30	1.31	-----	1.43	2.09	.98	.49	.83	4.45	1.77	.92	1.14	1.56	
31	1.32	-----	1.41	-----	.88	-----	.67	13.68	-----	.92	-----	1.39	
MEAN	2.78	1.90	2.49	2.13	1.23	.82	.79	1.08	.78	1.21	1.23	1.50	
INCHES	2.30	1.47	2.06	1.70	1.02	.65	.65	.89	.62	1.08	.78	1.24	
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.026654.													
1964 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA		BRUSH CREEK W-1		13.08			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of February 5 and 6, 1964													
2 -5	2 RG 1/ .00	2/.0296	2 -5	RG	R-2		2 -5						
				2300	.00	.00		2304	1.2066	.0000			
				2400	.06	.06		2400	1.2876	.0013			
				0015	.04	.07		2 -6	0036	1.4497	.0027		
				0040	.17	.14		0114	1.6838	.0032			
				C107	.22	.24		0132	2.1520	.0039			
Watershed conditions: Pasture, native grasses, mostly dormant, good cover, 34%; woods, mixture of pine and dormant hardwoods, good cover, 32%; hay, mostly alfalfa and orchard grass, dormant, good cover, 18%; cultivated, mostly corn stubble seeded to small grain, fair cover, 7%; idle, mostly dormant growth of weeds and grass, 7%; improved roads, 2%.													
				C130	.39	.39		0152	3.2146	.0049			
				C201	.35	.57		0212	5.6547	.0065			
				C215	.30	.64		0224	8.8783	.0081			
				C232	.42	.76		0232	11.5706	.0096			
				C255	.31	.88		0244	15.0283	.0126			
				C305	.24	.92		0304	21.5205	.0193			
				C315	.12	.54		0320	26.0046	.0264			
				C330	.24	1.00		0340	31.0741	.0369			
				C408	.11	1.07		0348	32.6859	.0417			
				C450	.04	1.10		0406	34.2256	.0540			
				C540	.06	1.15		0428	31.8125	.0663			
				0710	.02	1.18		0504	25.5004	.0854			
								0534	20.1158	.0980			
				RG	R-1	1.14		0600	16.9192	.1069			
				2 RG	AVG 1/	1.16		0624	15.1814	.1141			
								0636	14.5061	.1174			
								0652	14.1549	.1216			
								0800	10.9583	.1374			
								0832	9.5717	.1433			
								0910	8.5452	.1499			
								1000	7.5547	.1573			
								1112	6.4651	.1667			
								1124	6.2580	.1681			
								1240	5.6097	.1764			
								1620	4.3761	.1968			
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.001106. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 2/ CONTINUOUS FLOW PRIOR TO 2304. 3/ NORMAL BASE FLOW.									1928	3.7098	.2108		
									2240	3.2956	.2233		
									2400	2.2956	.2281		



BLACKSBURG, VIRGINIA BRUSH CREEK W-1



MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA POWELLS CREEK W-I 13.09 AREA—182 ACRES									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ^{1/} O	3.68 1.57	3.73 1.76	1.97 .80	2.24 .64	2.15 .30	2.15 .19	7.54 .90	8.34 2.36	1.41 .34	5.51 2.04	1.92 .53	2.95 1.18	43.59 12.61		
STA AV ^{2/} (58-64)	P	3.18 2.05	3.39 2.07	3.71 2.35	3.39 1.67	3.67 1.00	2.57 .36	4.11 .35	4.82 .67	2.50 .31	3.30 .85	2.99 .82	3.27 1.41	40.90 13.91		
MEAN 74 YR	P ^{3/}	3.51	3.38	3.77	3.43	3.87	3.77	4.48	4.40	3.47	2.79	2.67	3.27	42.81		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-31	.47	8-31	.36	8-31	.53	8-31	1.10	8-31	1.47	8-30	1.60	8-30	1.67	8-30	1.77
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	5-31 1962	1.31	5-31 1962	.78	3-6 1963	.96	3-6 1963	1.28	1-6 1962	1.64	12-28 1958	1.95	12-28 1958	2.25	3-5 1963	3.41
NOTES: Watershed conditions: Farm woods predominantly hardwood - 16%; pasture, native grass mixture, usually good to excellent cover - 64%; row crops, mostly corn and tobacco - 6%; small grain - 7%; alfalfa and other hay crops - 5%; total cultivated - 18%; idle land - 1%; paved roads - 1%. 1/ Precipitation Thiessen weighted from R-1 & R-2. 2/ Determined from continuous records from January, 1958 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 74-yr (1891-1964) U.S. Weather Bureau record period at Danville (Bridge St.), Va. Missing monthly totals for July and Aug. 1946 were estimated from nearby Weather Bureau records at Danville, Va., (Airport).																
WATERSHED DESCRIPTION																
SLOPES:		Slope-Percent	0-2	2-6	6-10	10-15	15+									
		Percent of Area	0	51	17	22	10									
SOILS: Final correlation: Developed from a mixture of basic rocks, such as hornblende and gabbro and acidic rocks such as granite, gneiss and schist.																
Type	Percent of area	Avg. depth (in.)	Topsoil		Permeability	Subsoil		Avg. depth to (in.)	Permeability	Substratum		Internal drainage				
			Structure			Structure				Structure						
Enon-Wilkes	19	6	Weak medium and coarse granular		Moderate	Moderate medium angular and subangular blocky		27	Slow		Slow	Slow				
Lloyd loam	15	6	Weak fine granular		Moderate	Moderate medium subangular blocky		44	Moderate		Moderate to moderately slow	Medium				
Lloyd clay loam	15	6	Weak fine granular		Moderate	Moderate medium subangular blocky		39	Moderate		Moderate to moderately slow	Medium				
Worsham fine sandy loam	12	16	Weak fine granular		Slow	Moderate medium angular and subangular blocky		40	Slow		Slow	Slow				
Bremo loam	6	8	Weak, fine granular		Moderate	-----		14	-----		Rapid to slow	Rapid				
Enon clay loams	5	6	Weak medium and coarse		Moderate	Moderate medium angular and subangular blocky		20	Slow		Slow	Rapid				
Wilkes loam	5	7	Weak, fine granular		Moderate	-----		14	-----		Slow	Rapid				
Cecil fine sandy loam	5	6	Weak fine granular		Moderate	Weak and moderate fine and medium subangular blocky		42	Moderate		Moderate to moderately slow	Medium				
Appling fine sandy loam	4	5	Weak fine granular		Moderate	Moderate medium and fine subangular blocky		45	Moderate		Moderate to moderately slow	Medium				
Starr loam	4	25	Weak fine & medium granular		Moderate	-----		48	-----		Moderate	Medium				
Hiwassee loam	3	7	Weak medium granular		Moderate	Moderate medium subangular blocky		80	Moderate		Slow	Medium				
Turbeville	3	6	Weak fine granular		Moderate	Moderate medium and fine angular and subangular		49	Moderate		Slow	Medium				
Local Alluvial land	2	25	Weak fine granular		Moderate	Weak to moderate medium subangular blocky		45	Moderate to Slow		Moderately slow to slow	Medium to slow				
Madison fine sandy loam	2	6	Weak fine granular		Moderate	Weak and moderate Medium subangular blocky		34	Moderate		Moderate	Medium				

WATERSHED DESCRIPTION—CONTINUED

EROSION:	Erosion class	1	2	3
	Percent of area	29	50	21

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII
	Percent of area	4	29	17	14	12	22	2

GEOLOGY: The watershed lies in an area of uncertain age with rock formations mostly of granite and hornblende gneiss with a small part having formations of hornblende gabbro, as shown on the Geologic map of Virginia by the Division of Mineral Resources (1963).

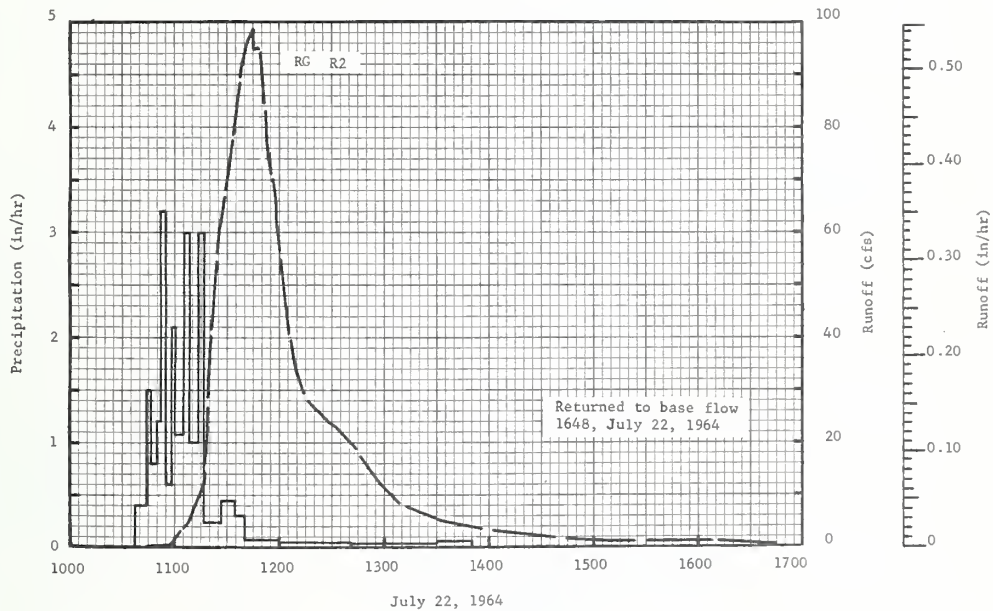
1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA							POWELLS CREEK W-1 13.09	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.53M	.00	.00	.00	.00	.23	.00	.00	.00	.72	.00	.05		
2	.00	.00	.26	.00	.00	.33	.00	.01	.00	.09	.00	.00		
3	.00	.00	.22	.08	.10	.01	.35	2.20	.00	.00	.00	.00		
4	.00	.00	.00	.00	.00	.01	.16	.00	.00	2.69	.00	.18		
5	.00	.13	.09	.00	.00	.00	.00	.00	.00	.43	.00	.30		
6	.11	.99	.00	.56	.00	.00	.00	.00	.00	.00	.00	.00		
7	.23	.08	.00	.88	.00	.00	.00	.00	.00	.00	.00	.00		
8	.00	.04	.00	.06	.00	.00	.00	.08	.00	.00	.23	.00		
9	.61	.08	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00		
10	.00	.00	.09	.00	.00	.00	.41	.00	.00	.00	.00	.00		
11	.00	.10	.00	.00	.00	.00	.00	.98	.00	.00	.00	.00		
12	.41S	.00	.00	.00	.91	.00	1.42	.00	.04	.00	.00	.45		
13	.19S	.00	.00	.33	.46	.02	1.36	.00	.74	.00	.00	.00		
14	.00	.00	.48	.05	.01	.00	.00	.00	.00	.00	.00	.01		
15	.00	.85	.23	.00	.00	.50	.00	.00	.00	.22	.00	.00		
16	.00	.01	.00	.00	.00	.01	.00	.41	.01	1.27	.00	.00		
17	.00	.00	.00	.00	.00	.00	.00	.02	.00	.09	.00	.01		
18	.00	.86	.00	.00	.00	.00	.49	.00	.00	.00	.01	.00		
19	.00	.00	.00	.00	.00	.25	.34	.00	.05	.00	.46	.05		
20	.42	.00	.18	.00	.01	.00	.00	.00	.02	.00	.16	.41		
21	.00	.00	.28	.00	.00	.00	.52	.00	.00	.00	.00	.00		
22	.00	.00	.00	.00	.00	.49	1.62	.00	.00	.00	.00	.00		
23	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00		
24	.49	.00	.00	.00	.00	.29	.00	.00	.00	.00	.04	.00		
25	.28	.21	.00	.00	.02	.01	.00	.00	.00	.00	1.02	.20		
26	.00	.00	.09	.00	.00	.00	.00	.00	.00	.00	.00	.76		
27	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.53		
28	.00	.38S	.00	.20	.32	.00	.01	.00	.07	.00	.00	.00		
29	.00	.00	.03	.01	.31	.00	.71	.00	.34	.00	.00	.00		
30	.00	-----	.01	.00	.00	.00	.02	1.33	.14	.00	.00	.00		
31	.41	-----	.01	-----	.01	-----	.00	3.31	-----	.00	-----	.00		
TOTAL	3.68	3.73	1.97	2.24	2.15	2.15	7.54	8.34	1.41	5.51	1.92	2.95		
STAAV	3.18	3.39	2.71	3.39	3.67	2.57	4.11	4.82	2.50	3.30	2.99	3.27		

NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1 AND R-2. STA AV IS FOR PERIOD JANUARY 1958 THROUGH 1964. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE PAGE 13.9-5.

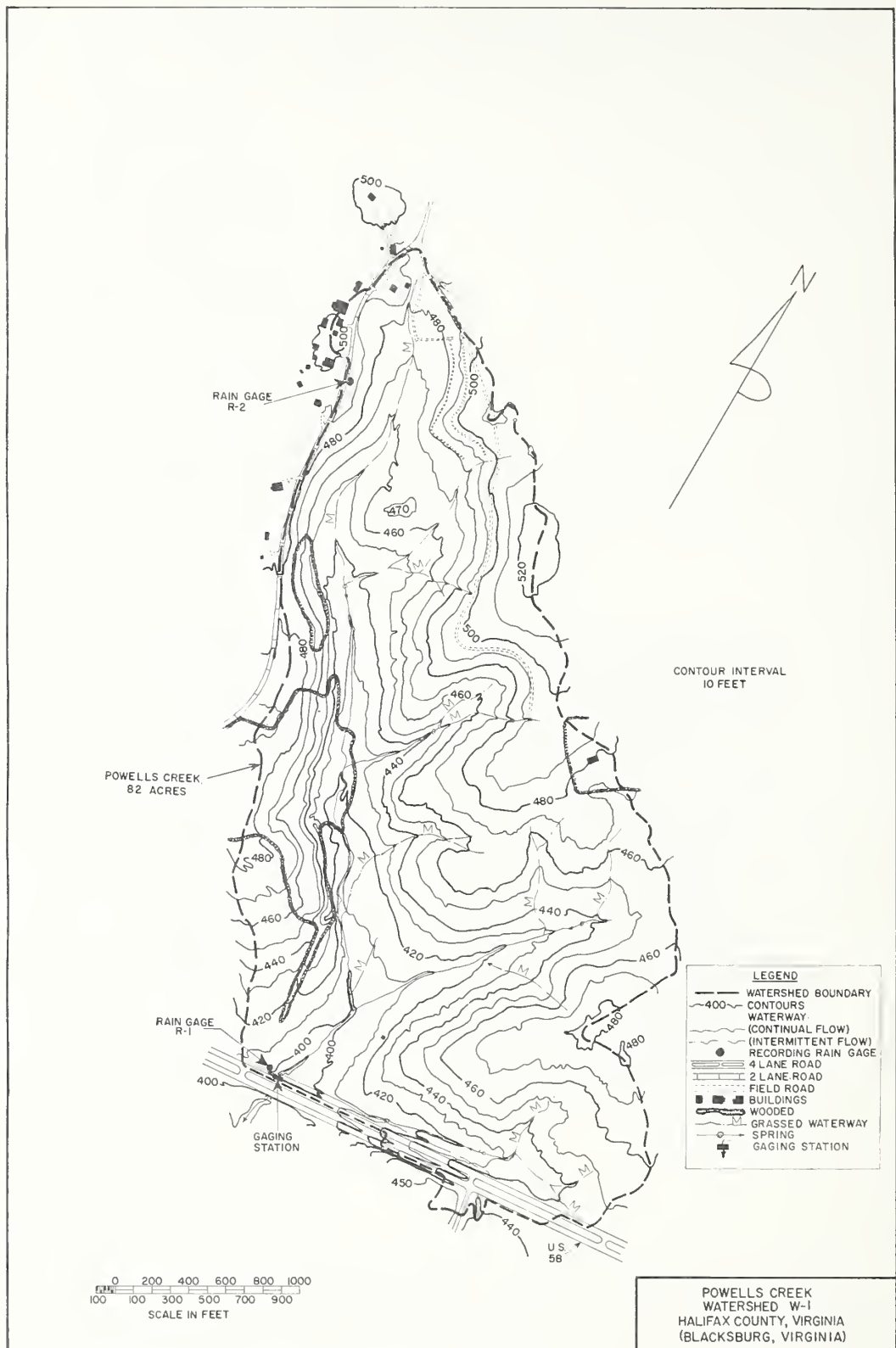
1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA		POWELLS CREEK W-I		13.09		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.26	.38	.23	.10	.10	.05	.04	.06	.40	.19	.10	.11
2	.54	.19	.25	.10	.10	.08	.04	.06	.18	.11	.10	.11
3	.31	.16	.74	.10	.10	.06	.05	2.85	.14	.08	.10	.11
4	.22	.16	.29	.10	.09	.05	.05	.30	.12	6.63	.10	.15
5	.17	.16	.32	.10	.07	.04	.04	.14	.10	2.03	.09	.25
6	.18	3.12	.20	.22	.07	.04	.04	.11	.09	.31	.08	.17
7	.48	.33	.19	1.17	.07	.04	.04	.09	.07	.19	.08	.13
8	.21	.31	.19	.33	.06	.04	.04	.08	.07	.16	.10	.12
9	1.34	.21	.18	.19	.06	.04	.04	.07	.07	.16	.11	.11
10	.30	.23	.16	.16	.06	.04	.05	.06	.07	.14	.09	.11
11	.19	.23	.14	.15	.06	.04	.05	.44	.06	.13	.08	.11
12	.19	.18	.14	.14	.20	.04	.26	.16	.06	.12	.08	.39
13	.19	.19	.13	.21	.15	.04	.89	.09	.15	.11	.06	.19
14	.16	.17	.23	.18	.09	.04	.08	.08	.06	.11	.08	.15
15	.14	.97	.44	.15	.07	.06	.05	.07	.06	.13	.08	.13
16	.14	.99	.19	.12	.06	.05	.05	.11	.06	2.30	.08	.12
17	.16	.27	.16	.12	.06	.04	.05	.10	.06	.78	.08	.13
18	.28	2.39	.13	.11	.06	.05	.06	.08	.06	.28	.08	.12
19	.79	.62	.13	.11	.06	.26	.06	.07	.06	.19	.15	.11
20	1.95	.26	.17	.11	.06	.05	.06	.06	.06	.17	.13	.37
21	.39	.22	.31	.10	.06	.05	.12	.06	.06	.16	.09	.18
22	.25	.19	.17	.10	.06	.05	3.87	.06	.06	.14	.08	.16
23	.20	.18	.13	.09	.06	.05	.17	.06	.06	.14	.08	.16
24	.38	.17	.13	.10	.06	.05	.09	.05	.05	.13	.08	.15
25	1.88	.19	.13	.09	.06	.05	.08	.05	.05	.13	1.19	.18
26	.28	.22	.15	.08	.06	.05	.07	.05	.05	.12	.18	1.58
27	.21	.17	.12	.08	.06	.05	.06	.05	.05	.11	.13	2.28
28	.17	.22	.11	.09	.06	.04	.06	.05	.05	.10	.12	.44
29	.16	.34	.11	.10	.06	.04	.14	.05	.09	.10	.11	.28
30	.16	-----	.10	.10	.05	.04	.09	.53	.07	.10	.11	.23
31	.22	-----	.10	-----	.05	-----	.07	11.96	-----	.10	-----	.15
MEAN	.39	.46	.20	.16	.07	.05	.22	.50	.09	.50	.14	.29
INCHES	1.57	1.76	.80	.64	.30	.19	.90	2.35	.24	2.04	.53	1.18
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.130779.												
1964 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA		POWELLS CREEK W-I		13.09		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Event of July 22, 1964												
	RG R-1			RG	R-2							
7-22	1/.05	2/.0054	7-22	1038	.00	.00	7-22	1044	.0844	.0000		
				1044	.40	.04		1051	.1266	.0001		
	RG R-2			1046	1.30	.09		1053	.2624	.0001		
7-22	3/.03			1049	.80	.13		1056	.7139	.0002		
				1052	1.20	.19		1100	1.4057	.0006		
				1055	3.20	.35		1102	2.6133	.0010		
				1058	.60	.38		1104	3.3308	.0015		
				1100	2.10	.45		1106	4.8503	.0030		
				1105	1.08	.54		1112	8.0545	.0053		
				1107	3.00	.64		1116	12.6553	.0091		
				1110	1.00	.69		1118	21.8567	.0122		
				1113	1.00	.74		1119	27.6705	.0145		
				1116	3.00	.89		1120	34.8441	.0173		
				1126	.24	.93		1121	40.5662	.0207		
				1134	.45	.99		1122	44.9724	.0246		
				1140	.30	1.02		1124	49.7275	.0332		
				1200	.06	1.04		1125	61.7971	.0385		
				1242	.03	1.06		1126	65.0490	.0440		
				1330	.02	1.08		1128	66.9759	.0560		
				1350	.03	1.09		1131	73.1017	.0751		
				RG	R-1	1.84		1133	77.2363	.0888		
				2 RG	AVG 4/	1.52		1136	84.0319	.1107		
								1137	88.5831	.1166		
								1139	92.2112	.1350		
								1140	93.7252	.1434		
								1142	96.4908	.1607		
								1144	98.6636	.1784		
								1145	95.1640	.1872		
								1148	95.2843	.2132		
								1150	92.2424	.2302		
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0054491. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ 0.05 IN. FROM 0630 TO 0710. 2/ CONTINUOUS FLOW PRIOR TO 1044. 3/ 0.03 IN. FROM 0630 TO 0710. 4/ THIESSEN WEIGHTED FOR RG R-1 AND R-2.												

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				POWELLS CREEK W-1				13.09
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
			Event of July 22, 1964 - Continued				7-22	1152	85.2963	.2463	
								1153	76.8803	.2537	
								1154	74.4817	.2606	
								1156	69.7746	.2737	
								1157	65.2692	.2798	
								1158	61.9788	.2856	
								1200	58.4810	.2965	
								1201	52.3497	.3016	
								1203	48.3803	.3107	
								1206	40.7185	.3228	
								1208	35.9618	.3298	
								1212	31.8712	.3421	
								1218	27.8045	.3584	
								1232	23.4809	.3910	
								1244	19.0306	.4141	
								1256	12.1286	.4311	
								1308	8.7464	.4425	
								1332	4.9513	.4574	
								1414	2.4426	.4715	
								1452	1.5856	.4785	
								1528	1.0809	.4828	
								1600	.8203	.4856	
								1648	1.6019	.4887	

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0054491. $\frac{1}{1}$ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA POWELLS CREEK W-I



MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA LITTLE WINNS CREEK W-1 13.10 AREA—1471 ACRES (2.30 SQ. MILES)									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ₁	3.80	3.88	1.84	2.22	1.51	2.54	6.62	5.14	1.56	6.51	1.48	3.07	40.17		
	O	1.07	1.29	.74	.75	.40	.29	.69	.58	.28	1.34	.38	.76	8.57		
STA AVG ² (58-64)	P ₂	3.25	3.52	3.67	3.48	3.35	3.17	3.39	4.99	2.85	3.36	2.98	3.22	41.23		
	O	1.17	1.33	1.50	1.25	.99	.70	.46	.67	.43	.83	.65	.97	10.95		
MEAN	P ₃															
34 YR		3.37	3.24	3.87	3.65	3.73	4.13	4.64	4.21	3.75	2.78	3.17	3.20	43.74		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	10-4	.23	10-4	.21	10-4	.35	10-4	.49	10-4	.56	10-4	.66	10-4	.74	10-1	.89
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	10-10 1959	1.12	10-10 1959	.71	10-10 1959	1.03	10-10 1959	1.41	10-10 1959	1.51	10-10 1959	1.58	10-10 1959	1.62	10-10 1959	1.91
NOTES: Watershed conditions: Farm woods, mixture of hardwoods and conifers, with pine predominating, 58%; row crops, mostly corn and tobacco, 13%; small grain, 4%; alfalfa and other hay crops, 4%; other cultivated areas, 1%; total cultivated, 22%; pasture, native grass mixture usually fair cover, 9%; idle land, 11%. Conditions are consistent from year to year. 1/ Precipitation Thiessen weighted R-1, R-2 and R-3. 2/ Determined from continuous records from January 1958 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 34-yr (1931-1964) U. S. Weather Bureau record period at Halifax (1 mile N), Virginia.																
WATERSHED DESCRIPTION																
SLOPES:		Slope-Percent	0-2	2-6	6-10	10-15	15+									
		Percent of Area	2.2	53.8	20.8	20.5	2.7									
SOILS: Final correlation: Developed from a mixture of basic rocks, such as hornblende and gabbro and acidic rocks such as granite, gneiss and schist.																
Type	Percent of area	Avg. Depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage							
			Structure	Permeability	Structure	Permeability	Avg. depth to (in)	Permeability								
Cecil fine sandy loam	41	6	Weak fine granular	Moderate	Moderate medium subangular blocky	Moderate	43	Moderate to moderately slow	Medium							
Appling fine sandy loam	25	8	Weak fine granular	Moderate	Moderate medium subangular blocky	Moderate	46	Moderate to slow	Medium							
Appling sandy loam	9	8	Weak fine granular	Moderate to moderately rapid	Moderate medium subangular blocky	Moderate	42	Moderate to slow	Medium							
Appling clay loam	4	8	Weak fine granular	Moderate	Moderate medium subangular blocky	Moderate	36	Moderate to slow	Medium							
Cecil clay loam	6	6	Weak fine granular	Moderate	Moderate medium subangular blocky	Moderate	36	Moderate to moderately slow	Medium							
Louisburg sandy loam	4	9	Weak fine granular	Moderately rapid to rapid	-----	-----	10	Rapid to slow	Medium							
Wilkes fine sandy loam	2	8	Weak fine granular	Moderate	Moderate medium subangular blocky	Slow	21	Slow	Rapid							
Local Alluvial land	2	21	Weak fine granular	Moderate	Weak to moderate medium subangular blocky	Moderate to moderate slow	60	Moderately slow to slow	Medium to moderately slow							
Mixed Alluvial land	1	15	Weak fine granular	Moderate	-----	-----	31	Moderately slow to slow	Medium to moderately slow							
Mixed Alluvial land wet	1	15	Weak fine granular	Slow	-----	-----	31	Slow	Slow							
Enon clay loam	1	4	Moderate, fine angular and subangular blocky	Moderate to slow	Plastic	Slow	18	Slow	Slow							
Others	4	14	Weak, fine granular and subangular blocky	Moderate to slow	Moderate medium subangular	Slow	40	Slow	Slow							

WATERSHED DESCRIPTION - CONTINUED

EROSION:	Erosion class	1	2	3
	Percent of area	15	73	12

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII
	Percent of area	0	49	20	18	1	9	3

GEOLOGY: The watershed lies in an area of uncertain age with rock formations of biotite and muscovite granite gneiss and granodiorite gneiss as shown on the Geologic map of Virginia by the Division of Mineral Resources (1963).

1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA LITTLE WINNS CREEK W-I						
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.65M	.02	.00	.00	.00	.21	.00	.00	.00	1.44	.00	.00
2	.00	.00	.22	.00	.00	.51	.00	.15	.00	.20	.00	.00
3	.00	.00	.21	.12	.07	.00	.27	.93	.00	T	.00	.00
4	.00	.00	.00	.00	.00	.00	.04	.00	.00	2.88	.00	.08
5	.00	.05	.06	.00	.00	.00	.00	.00	.00	.45	.00	.61
6	.06	1.08	.00	.56	.00	.00	.00	.00	.00	.00	.00	.00
7	.20	.06	.00	.94	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.06	.00	.03	.00	.00	.00	.00	.00	.00	.14	.00
9	.62	.12	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00
10	.00	.00	.07	.00	.00	.00	.96	.00	.00	.00	.00	.00
11	.00	.09	.00	.00	.00	.00	.09	.47	.00	.00	.00	.00
12	.52S	.00	.00	.00	.34	.00	1.98	.01	.04	.00	.00	.40
13	.16S	T	.00	.18	.48	.17	.58	.00	.93	.00	.00	.00
14	.00	.00	.43	.07	.00	.00	.00	.00	.02	.00	.00	.00
15	.00	.88	.21	.00	.00	.48	.00	T	.00	.10	.00	.00
16	.00	.02	.00	.00	.00	.00	.00	.39	.00	1.39	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
18	.00	.89	.00	.00	.00	.00	.37	.00	.00	T	.01	.00
19	.00	.00	.00	.00	.00	.13	.20	.00	.01	.00	.40	.02
20	.37	.00	.23	.00	.00	.00	.17	.00	.00	.00	.18	.47
21	.00	.00	.31	.00	.00	.12	.42	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.53	.07	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00
24	.47	.00	.00	T	.00	.39	.00	.00	.00	.00	.02	.00
25	.41	.21	.00	.00	.06	.00	.00	.00	.00	.00	.64	.12
26	.00	.01	.10	.00	.00	.00	.00	.00	.00	.00	.00	1.11
27	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.26
28	.00	.39S	.00	.20	.26	.00	.08	.00	.08	.00	.00	.00
29	.00	.00	.00	.02	.30	.00	1.33	.00	.31	.00	.00	.00
30	.00	-----	.00	T	.00	.00	.02	1.12	.17	.00	.09S	.00
31	.34	.00	.00	-----	.00	-----	.00	2.07	-----	.00	-----	.00
TOTAL	3.80	3.88	1.84	2.22	1.51	2.54	6.62	5.14	1.56	6.51	1.48	3.07
STA AV	3.25	3.52	3.67	3.48	3.35	3.17	3.39	4.99	2.85	3.36	2.98	2.22

NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1, R-2 AND R-3. STA AV IS FOR PERIOD JANUARY 1958 THROUGH 1964. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.10-8.

1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA LITTLE WINNS CREEK W-I						13.10
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.47	1.65	1.66	1.09	1.02	.78	.43	.60	1.40	2.65	.76	.76
2	1.84	1.35	1.67	1.09	1.02	1.02	.42	.60	.79	1.05	.76	.76
3	1.82	1.25	3.10	1.14	1.03	.72	.53	4.36	.71	.71	.76	.76
4	1.56	1.22	2.31	1.10	.95	.64	.50	1.44	.63	36.49	.76	.79
5	1.37	1.18	1.99	1.09	.91	.60	.44	.82	.58	8.49	.76	1.29
6	1.25	12.28	1.63	1.48	.89	.59	.42	.69	.50	2.53	.76	1.27
7	1.95	3.15	1.50	7.60	.87	.59	.40	.63	.52	1.50	.76	.99
8	1.49	2.31	1.49	3.55	.84	.59	.39	.58	.52	1.24	.83	.92
9	5.17	1.84	1.43	2.17	.82	.58	.38	.52	.52	1.10	.80	.86
10	2.68	1.74	1.37	1.69	.77	.54	1.73	.52	.53	.97	.76	.82
11	1.53	1.63	1.26	1.47	.77	.53	.78	1.02	.52	.91	.76	.82
12	1.52	1.47	1.25	1.41	.93	.50	13.13	.74	.49	.88	.73	1.20
13	1.41	1.43	1.17	1.52	1.20	.56	3.09	.61	1.07	.82	.71	1.03
14	1.16	1.35	1.40	1.44	.90	.55	1.10	.61	.56	.82	.71	.92
15	1.09	2.50	1.89	1.33	.80	.63	.73	.54	.51	.83	.73	.86
16	1.09	7.26	1.47	1.25	.79	.68	.64	.71	.50	4.64	.76	.82
17	1.09	2.50	1.38	1.22	.75	.50	.60	.64	.53	3.15	.76	.82
18	1.16	9.69	1.27	1.19	.72	.57	.79	.56	.54	1.57	.76	.78
19	1.14	6.38	1.25	1.17	.72	.58	.91	.53	.52	1.24	.99	.76
20	5.21	2.91	1.33	1.17	.69	.52	.96	.51	.52	1.13	.83	1.20
21	3.60	2.13	1.63	1.17	.69	.48	1.64	.51	.52	1.09	.73	1.00
22	2.29	1.84	1.38	1.17	.69	.83	.94	.48	.48	1.05	.71	.99
23	1.81	1.64	1.28	1.10	.66	.61	.72	.48	.47	1.02	.71	.95
24	1.71	1.59	1.27	1.09	.65	.66	.63	.45	.44	.99	.71	.95
25	9.51	1.59	1.27	1.03	.67	.59	.62	.45	.42	.91	1.29	.97
26	2.88	1.54	1.29	1.02	.60	.50	.61	.45	.42	.80	.92	8.88
27	2.03	1.49	1.17	1.03	.62	.48	.57	.47	.43	.89	.79	6.65
28	1.58	1.45	1.17	1.13	.68	.44	.64	.48	.48	.86	.76	3.06
29	1.39	1.52	1.15	1.15	.84	.43	5.81	.49	.73	.82	.76	1.98
30	1.33	-----	1.11	1.06	.67	.43	1.36	2.67	.57	.79	.78	1.59
31	1.32	-----	1.09	-----	.63	-----	.73	11.65	-----	.76	-----	1.37
MEAN	2.14	2.75	1.47	1.54	.80	.59	1.38	1.15	.58	2.67	.79	1.51
INCHES	1.07	1.29	.74	.75	.40	.29	.69	.58	.28	1.34	.38	.76

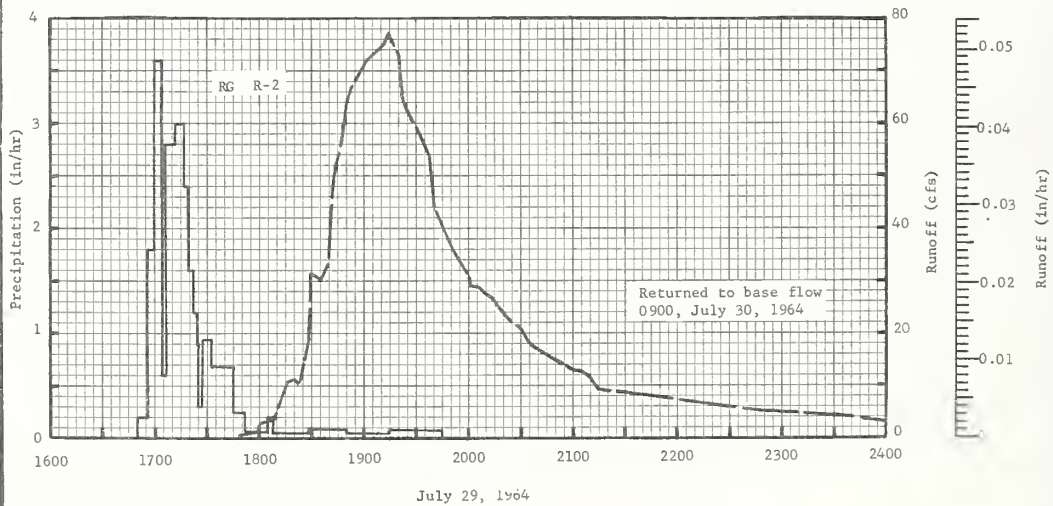
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.016181.

1964 SELECTED RUNOFF EVENT						BLACKSBURG, VIRGINIA LITTLE WINNS CREEK W-I						13.10
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Event of July 29 and 30, 1964												
3 RG 1/ 7-29 .00		2/.0076	RG		R-2		7-29		1748	.5636	.0000	
			1650		.00	.00			1758	1.3201	.0001	
			1656		.20	.02			1800	2.3287	.0001	
			1700		1.80	.14			1802	2.5660	.0002	
			1702		3.60	.26			1804	2.5215	.0003	
			1704		3.60	.38						
			1706		.60	.40			1809	3.6120	.0004	
			1712		2.80	.68			1812	6.6598	.0006	
			1716		3.00	.88			1814	9.9526	.0008	
			1718		2.40	.96			1816	10.6646	.0010	
			1721		1.60	1.04			1820	11.0799	.0015	
			1723		1.20	1.08			1822	10.7981	.0018	
			1725		.90	1.11			1824	11.2727	.0020	
			1727		.30	1.12			1828	18.8373	.0027	
			1732		.96	1.20			1829	28.3450	.0030	
			1745		.69	1.35			1830	31.8158	.0033	
			1752		.26	1.38			1832	31.0000	.0040	
			1805		.05	1.39			1835	30.4067	.0050	
			1808		.20	1.40			1840	34.5153	.0069	
			1828		.03	1.41			1842	45.9660	.0078	
			1850		.08	1.44			1844	52.3736	.0089	
			1915		.05	1.46			1847	56.5861	.0107	
			1945		.08	1.50			1850	64.0913	.0127	
									1854	67.4287	.0157	
									1902	72.1009	.0220	
			7-29 1658		.00	.00			1912	75.7942	.0303	
			1702		3.75	.25			1914	77.6334	.0320	
			1705		5.00	.50			1916	74.6076	.0337	
			1710		3.00	.75			1920	73.4062	.0370	
			1712		1.20	.79			1922	64.8775	.0386	
			1713		4.80	.87			1928	60.3387	.0428	

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0006742. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ THIESSEN WEIGHTED AVERAGE FOR RG R-1, R-2 AND R-3. 2/ CONTINUOUS FLOW PRIOR TO 1748.

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				LITTLE WINNS CREEK W-I				13.10
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of July 29 and 30, 1964 - Continued											
			7-29	RG	R-3		7-29				
				1716	1.60	.96		1937	53.6047	.0486	
				1717	3.00	1.01		1940	45.8325	.0502	
				1720	.40	1.03		1941	43.5780	.0507	
				1724	.15	1.04		1950	37.1110	.0548	
				1728	.00	1.04		2000	31.5933	.0587	
				1730	2.70	1.13		2001	28.9976	.0590	
				1739	.80	1.25		2005	28.9828	.0603	
				1742	.40	1.27		2012	27.3215	.0625	
				1746	.15	1.28		2013	26.5206	.0628	
				1750	.15	1.29		2020	23.7172	.0648	
				1818	.02	1.30		2028	21.7297	.0669	
				1833	.08	1.32		2037	18.0808	.0689	
				1850	.11	1.35		2052	15.6631	.0717	
				1900	.06	1.36		2100	13.3493	.0730	
				1920	.12	1.40		2104	12.9191	.0736	
				RG	R-1	1.17		2110	11.9402	.0744	
				3 RG	AVG 1/	1.33		2114	9.7301	.0749	
								2200	7.6091	.0794	
								2216	6.6301	.0807	
								2240	5.5770	.0823	
								2332	4.2866	.0852	
								2400	3.7823	.0865	
							7-30	0120	2.5660	.0894	
								0136	2.1062	.0898	
								0420	1.7651	.0934	
								0552	1.5722	.0951	
								0900	1.3201	.0981	

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0006742. 1/ THIESSEN WEIGHTED FOR RG R-1, R-2 & R-3. 2/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA LITTLE WINNS CREEK W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA ROCKY RUN BRANCH W-I 13.11 AREA—555 ACRES								
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964	P 1	4.03	3.51	2.14	2.55	1.69	3.54	5.45	7.76	3.47	4.05	1.78	3.11	43.08
	O	1.06	.92	.89	.70	.36	.22	.27	.82	.72	.63	.38	.74	7.71
STA AVE (58-64)	P	3.15	3.61	3.40	2.82	3.76	4.10	4.64	3.83	3.13	3.03	2.91	3.14	41.52
	O	1.13	1.49	1.58	1.14	1.14	.80	.60	.42	.37	.47	.66	.91	10.71
MEAN	P													
34 YR		3.23	3.33	3.50	3.36	3.98	4.18	5.96	5.13	4.01	2.44	2.88	3.14	45.14

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		5 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-31	.19	8-31	.17	8-31	.28	8-31	.48	8-31	.56	8-31	.62	8-31	.67	8-30	.74

MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	6-7 1961	.22	6-7 1961	.19	5-8 1958	.34	5-6 1958	.71	5-6 1958	.98	5-6 1958	1.45	5-5 1958	2.09	4-30 1958	2.86

NOTES: Watershed conditions: Mixed cover; farm woods, mixture of hardwoods and conifers - 56%; permanent pasture, usually a good cover of native grass and clover mixture - 11%; alfalfa and other hay crops - 5%; corn - 1%; tobacco - 3%; small grain - 7%; total cultivated - 16%; idle land, usually a good cover of tall weeds, vines and short growing plants - 15%; paved roads - 2%. 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from April 1958 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 34-yr (1931-64) U.S. Weather Bureau record period at Emporia (1 mile WNW), Virginia.

WATERSHED DESCRIPTION

SLOPES:	Slope-Percent	0-2	2-6	6-10	10-15	15+
	Percent of Area	3	65	24	7	1

SOILS. Final correlation: Developed mostly from a mixture of granite, granite gneiss, schist and quartz mica schist.

Type	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to (in.)	Perme- ability	
Appling coarse sandy loam	48	8	Weak fine granular	Moderate to moderately rapid	Moderate medium subangular blocky	Moderate	40	Moderate to moderately slow	Medium
Cecil coarse sandy loam	30	7	Weak fine granular	Moderate to moderately rapid	Moderate medium subangular blocky	Moderate	40	Moderate to moderately slow	Medium
Local alluvial land (Seneca soil material)	6	16	Weak fine granular	Moderate	Weak to moderate medium subangular blocky	Moderate	55	Moderately slow to slow	Moderately slow
Worsham fine sandy loam	5	17	Weak fine granular	Slow	Moderate, medium angular and sub-angular blocky	Slow	40	Slow	Slow
Madison clay loam	3	--	-----	----	Moderate to weak medium subangular blocky	Moderate	30	Moderate	Medium
Mixed alluvial land	3	15	Weak fine granular	Slow	-----	----	15	Slow	Slow
Cecil clay loam	2	7	Weak fine granular	Moderate	Moderate medium subangular blocky	Moderate	33	Moderate to moderately slow	Medium
Appling sandy clay loam	2	8	Weak fine granular	Moderate	Moderate medium subangular blocky	Moderate	33	Moderate to moderately slow	Medium
Louisburg gritty sandy loam	1	7	Weak fine granular	Moderately rapid to rapid	Weak fine subangular blocky	Moderate	11	Rapid to slow	Rapid

EROSION:	Erosion class	1	2	3
	Percent of area	16	77	7

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII
	Percent of area	0	57	24	9	5	4	1

GEOLOGY: The watershed lies in an area classified as Precambrian of uncertain age relationships with rock formations of microcline, biotite granite and chloritic granodiorite (Petersburg granite), as shown on the Geologic map of Virginia by the Division of Mineral Resources (1963).

1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA			ROCKY RUN BRANCH W-1 13.11			
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.69M	.23	.00	.00	.00	.10	.00	.00	.02	.29	.00	.00
2	.00	.00	.18	.01	.00	.43	.00	.00	.00	.21	.00	.00
3	.00	.00	.14	.12	.06	.00	.00	.80	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.64	.00	.21
5	.00	.00	.00	.02	.00	.04	.00	.00	.00	.71	.00	1.03
6	.21	.75	.00	.29	.00	.00	.00	.01	.00	.00	.00	.04
7	.26	.06	.00	.58	.00	.00	.00	.00	.00	.00	.00	.00
8	.01	.14	.00	.23	.00	.00	.24	.03	.00	.00	.08	.00
9	1.12	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.80	.00	.00	.00	.00
11	.01	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.26S	.00	.00	.00	.45	.00	1.25	.14	.09	.00	.00	.31
13	.18S	.00	.00	.00	.45	.00	.32	.00	2.91	.00	.00	.00
14	.00	.00	.44	.37	.01	.00	.00	.00	.00	.00	.00	.00
15	.00	.77	.32	.04	.00	.06	.00	.00	.00	.00	.00	.00
16	.00	.03	.00	.00	.02	.00	.00	.13	.00	.87	.00	.00
17	.00	.01	.00	.00	.08	.00	.09	.02	.00	.28	.00	.03
18	.00	.44	.00	.00	.00	1.22	.15	.00	.00	.00	.00	.00
19	.04	.00	.00	.00	.00	.54	1.83	.00	.00	.00	.48	.02
20	.20	.00	.58	.02	.00	.00	.00	1.63	.00	.05	.23	.49
21	.00	.00	.21	.00	.00	.31	.28	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00
24	.33	.00	.00	.00	.00	.84	.24	.00	.00	.00	.00	.00
25	.58	.32	.00	.00	.06	.00	.00	.09	.00	.00	.95	.02
26	.00	.00	.23	.00	.00	.00	.00	.00	.00	.00	.00	.80
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.16
28	.00	.71S	.00	.00	.35	.00	.37	.00	.15	.00	.00	.00
29	.00	-----	.00	.87	.21	.00	.43	.00	.00	.00	.00	.00
30	.00	-----	.03	.00	.00	.00	.00	.78	.30	.00	.04	.00
31	.14	-----	.01	-----	.00	-----	.00	3.33	-----	.00	-----	.00
TOTAL	4.03	3.51	2.14	2.55	1.69	3.54	5.45	7.76	3.47	4.05	1.78	3.11
STA AV	3.15	3.61	3.40	2.82	3.76	4.10	4.64	3.83	3.13	3.03	2.91	3.14
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1 AND R-2. STA AV IS FOR PERIOD APRIL 1958 THROUGH 1964. FOR TOPOGRAPHIC MAP OF WATERSHED SEE PAGE 13.11-6.												

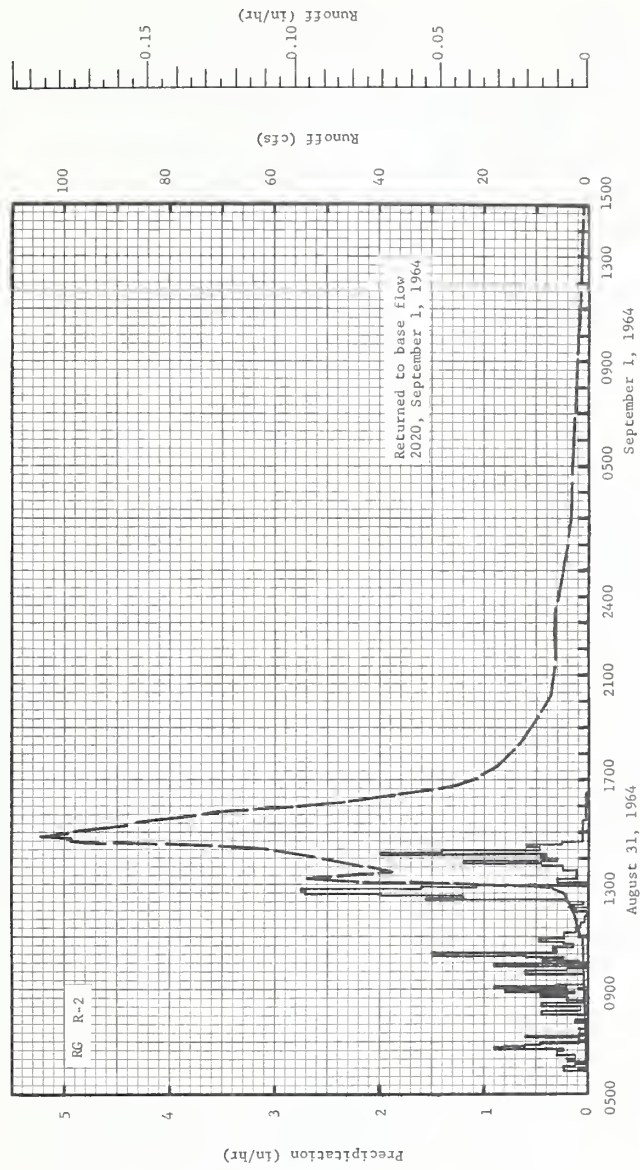
1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA			ROCKY RUN BRANCH W-1 13.11			
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.10	.69	1.04	.48	.45	.20	.10	.13	2.12	.25	.25	.31
2	.70	.53	.85	.46	.42	.30	.10	.11	.59	.25	.25	.31
3	.52	.48	1.11	.48	.42	.22	.09	.23	.36	.21	.25	.31
4	.44	.46	.86	.45	.38	.18	.09	.22	.27	1.20	.25	.36
5	.39	.46	.78	.42	.36	.19	.09	.14	.23	2.82	.25	1.12
6	.39	1.37	.67	.51	.33	.18	.08	.12	.18	1.09	.25	1.34
7	.71	.83	.65	1.05	.32	.17	.07	.11	.17	.60	.25	.72
8	.50	.80	.63	1.04	.30	.17	.09	.11	.17	.46	.25	.58
9	3.86	.67	.60	.82	.28	.15	.08	.09	.17	.40	.25	.48
10	1.58	.61	.57	.67	.26	.13	.07	.33	.17	.35	.25	.43
11	.89	.57	.51	.63	.24	.11	.07	.16	.17	.32	.25	.42
12	.74	.51	.50	.56	.33	.11	.21	.14	.17	.31	.25	.53
13	.65	.51	.47	.55	.36	.11	.27	.12	6.03	.30	.25	.52
14	.51	.48	.57	.66	.34	.11	.13	.11	1.56	.29	.25	.44
15	.49	.60	.87	.68	.27	.10	.09	.10	.59	.29	.25	.40
16	.47	1.62	.66	.53	.26	.10	.08	.12	.40	.52	.25	.38
17	.44	.81	.62	.50	.25	.09	.09	.13	.31	.67	.25	.38
18	.44	.99	.53	.48	.23	.37	.11	.11	.29	.50	.25	.35
19	.48	1.19	.50	.46	.22	.35	1.59	.10	.27	.39	.37	.32
20	.78	.81	.73	.46	.21	.14	.32	1.75	.26	.36	.32	.61
21	.77	.69	1.06	.46	.19	.14	.36	.22	.24	.33	.27	.50
22	.56	.65	.79	.44	.19	.14	.36	.17	.23	.31	.25	.46
23	.51	.61	.67	.40	.19	.12	.23	.15	.22	.29	.25	.43
24	.47	.57	.61	.39	.16	.44	.21	.13	.20	.28	.25	.42
25	2.30	.61	.60	.38	.18	.21	.18	.12	.19	.28	.83	.39
26	1.11	.70	.65	.38	.18	.15	.16	.12	.20	.28	.55	.71
27	.77	.57	.58	.38	.16	.13	.15	.11	.22	.28	.38	1.25
28	.64	.83	.55	.38	.20	.12	.21	.11	.22	.28	.34	.91
29	.56	1.16	.51	.53	.24	.11	.21	.12	.22	.28	.32	.69
30	.52	-----	.50	.64	.19	.11	.22	.21	.26	.26	.31	.60
31	.51	-----	.50	-----	.19	-----	.15	13.23	-----	.25	-----	.52
MEAN	.80	.74	.67	.54	.27	.17	.20	.62	.56	.47	.30	.55
INCHES	1.06	.92	.89	.70	.36	.22	.27	.82	.72	.63	.38	.74
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.042886.												

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				ROCKY RUN BRANCH W-I				13.11
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of August 31, 1964											
8-31	2 RG 1/ .00	2/.0017	8-31	RG	R-2		8-31				
				0557	.00	.00		0600	.1512	.0000	
				0602	.24	.02		0628	.1791	.0001	
				0607	.12	.03		0643	.2183	.0002	
				0617	.00	.03		0648	.2463	.0003	
				0620	.20	.04		0656	.2575	.0003	
				0634	.13	.07		0712	.2575	.0004	
				0640	.30	.10		0720	.3023	.0005	
				0645	.24	.12		0728	.3191	.0006	
				0647	.90	.15		0732	.3247	.0006	
				0650	.80	.19		0746	.4479	.0008	
				0654	.60	.23		0750	.5710	.0008	
				0658	.45	.26		0752	.5766	.0009	
				0712	.09	.28		0758	.5710	.0010	
				0714	.60	.30		0808	.5374	.0011	
				0717	.00	.30		0832	.4479	.0015	
				0730	.09	.32		0846	.5150	.0017	
				0745	.00	.32		0848	.5542	.0017	
				0750	.12	.33		0855	.5542	.0018	
				0803	.00	.33		0857	.6158	.0019	
				0807	.45	.36		0908	.6102	.0021	
				0815	.08	.37		0916	.6214	.0022	
				0823	.08	.38		0922	.6886	.0023	
				0827	.45	.41		0929	.8117	.0025	
				0837	.06	.42		0937	1.2260	.0027	
				0843	.20	.44		0940	1.2372	.0029	
				0852	.47	.51		0945	1.2708	.0030	
				0857	.12	.52		0949	1.2260	.0032	
				0900	.80	.56		1015	1.0021	.0041	
				0903	.20	.57		1024	1.0357	.0043	
				0905	.90	.60		1030	1.1476	.0045	
				0909	.30	.62		1040	1.3939	.0049	
				0939	.04	.64		1050	1.5731	.0053	
				0942	.60	.67		1100	1.9706	.0059	
				0945	.20	.68		1110	2.1217	.0065	
				0952	.00	.68		1126	2.1161	.0075	
				0954	.90	.71		1132	2.3120	.0079	
				1008	.09	.73		1136	2.5584	.0082	
				1012	.45	.76		1150	2.9166	.0093	
				1017	.24	.78		1156	3.0542	.0099	
				1019	.60	.80		1212	3.1518	.0113	
				1021	1.50	.85		1216	3.1798	.0117	
				1023	.30	.86		1234	3.7635	.0136	
				1033	.36	.92		1248	5.5590	.0156	
				1045	.15	.95		1253	7.4008	.0166	
				1053	.23	.98		1254	9.7184	.0168	
				1058	.48	1.02		1255	10.1103	.0171	
				1109	.22	1.06		1301	19.9631	.0198	
				1120	.11	1.08		1303	34.1880	.0214	
				1133	.09	1.10		1305	43.4585	.0237	
				1145	.05	1.11		1307	47.0470	.0264	
				1200	.04	1.12		1312	53.4065	.0339	
				1203	.00	1.12		1316	54.2854	.0403	
				1210	.17	1.14		1318	50.3219	.0434	
				1220	.06	1.15		1324	43.9624	.0518	
				1223	.20	1.16		1328	39.9373	.0568	
				1228	1.56	1.29		1332	37.5021	.0614	
				1232	1.20	1.37		1336	39.2767	.0660	
				1238	2.00	1.57		1343	45.7482	.0749	
				1242	2.70	1.75		1359	49.1911	.0975	
				1249	2.74	2.07		1417	57.4484	.1261	
				1252	1.60	2.15		1421	62.4923	.1332	
				1257	1.08	2.24		1423	64.7204	.1370	
				1305	.00	2.24		1426	70.5872	.1430	
				1313	.30	2.28		1428	75.3401	.1474	
				1330	.11	2.31		1430	80.7143	.1520	

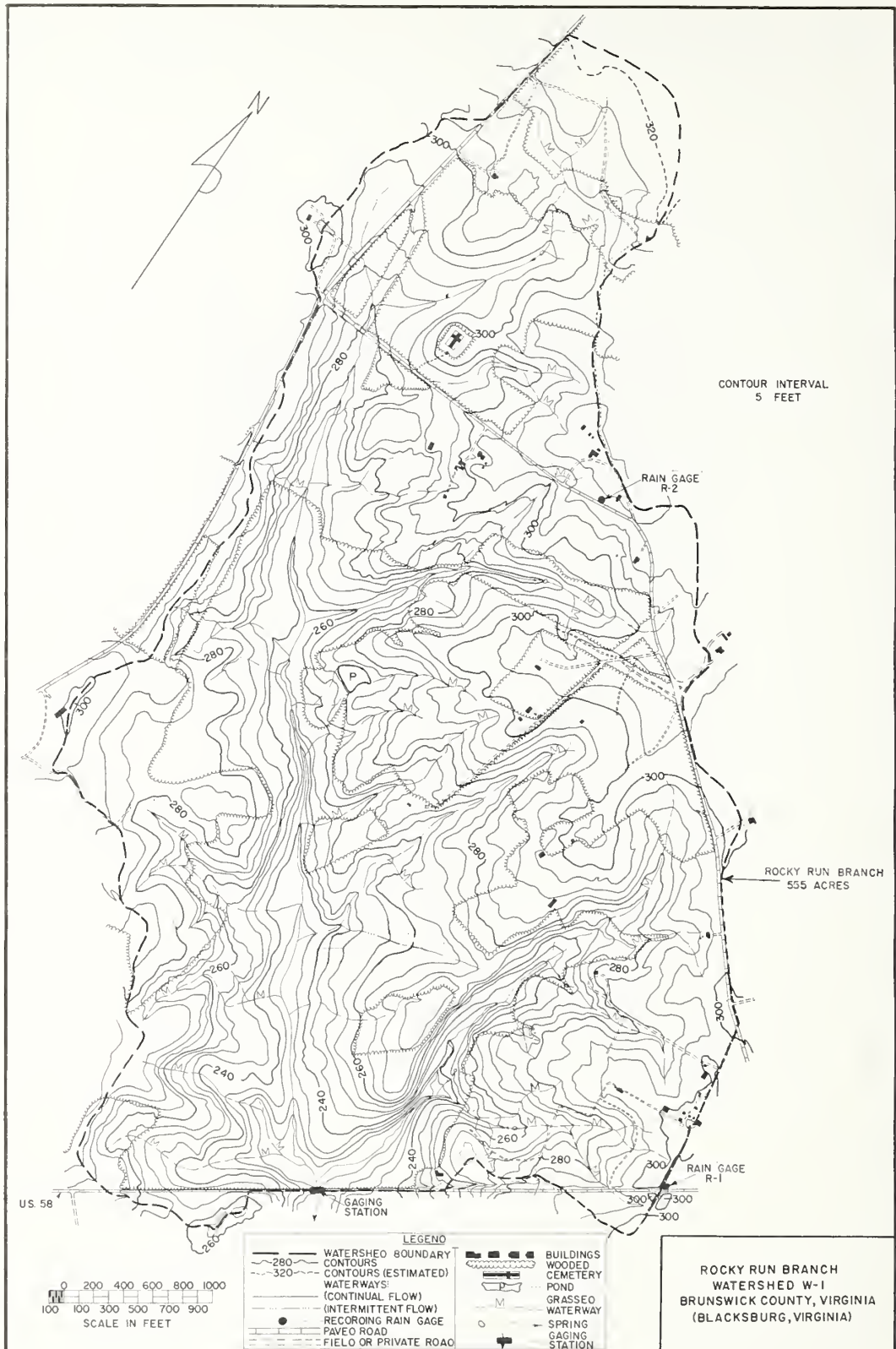
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0017869. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON PREVIOUS PAGE. 1/ THIESSEN WEIGHTED AVERAGE FOR RG R-1 AND R-2. 2/ CONTINUOUS FLOW PRIOR TO 0600.

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				ROCKY RUN BRANCH W-I				13:11
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of August 31, 1964 - Continued											
				RG	R-2						
			8-31	1342	.25	2.36	8-31	1433	85.7639	.1595	
				1346	.45	2.39		1436	90.1416	.1673	
				1348	1.20	2.43		1438	96.2548	.1729	
				1358	.30	2.48		1440	99.2275	.1787	
				1403	.96	2.56		1443	99.0987	.1875	
				1407	.90	2.62		1449	104.1146	.2057	
				1414	1.97	2.85		1454	104.2098	.2212	
				1417	1.40	2.92		1458	99.5730	.2333	
				1422	.48	2.96		1504	95.2528	.2507	
				1428	.60	3.02		1507	94.6202	.2592	
				1435	.26	3.05		1517	88.3110	.2864	
				1525	.05	3.09		1527	82.5673	.3118	
				1630	.02	3.11		1537	75.7767	.3354	
				RG	R-1	3.42		1544	69.5124	.3506	
				2 RG	AVG 1/	3.23		1549	64.9611	.3606	
								1552	62.5091	.3663	
								1555	60.3314	.3717	
								1558	56.5806	.3770	
								1601	54.2518	.3819	
								1604	51.5647	.3866	
								1609	47.2429	.3940	
								1614	43.7273	.4007	
								1620	40.4355	.4083	
								1624	37.7092	.4129	
								1631	34.8206	.4205	
								1638	30.1965	.4272	
								1640	28.6234	.4290	
								1647	25.6676	.4347	
								1700	22.9189	.4441	
								1716	20.3101	.4544	
								1736	17.8917	.4657	
								1800	15.1822	.4775	
								1812	14.6840	.4829	
								1836	12.7302	.4927	
								1924	9.9479	.5089	
								1936	9.4441	.5123	
								1940	8.9795	.5134	
								1956	8.5708	.5176	
								2020	7.6751	.5234	
								2100	6.4995	.5319	
								2140	6.2196	.5394	
								2212	6.2531	.5454	
								2220	6.5499	.5469	
								2248	6.5163	.5523	
								2332	6.2140	.5607	
								2400	5.9061	.5657	
							9 -1	0036	5.3127	.5717	
								0248	3.9971	.5900	
								0500	3.2749	.6043	
								0708	2.5472	.6154	
								0852	2.2001	.6228	
								1040	1.8698	.6293	
								1500	1.2372	.6413	
								1840	.9461	.6485	
								2020	2/ .8845	.6512	

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0017869. 1/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 2/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA ROCKY RUN BRANCH W-I



MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH W-I 13.12						
							AREA—192 ACRES						
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964	4.83	3.71	2.33	3.91	1.62	.45	3.34	2.77	3.78	2.80	2.27	2.69	
PL/	2.85	1.63	.66	.93	.14	.00	.05	.06	.01	.06	.12	.36	6.87
STA AVG-2/	2.68	3.19	3.63	3.16	2.79	3.57	3.27	3.42	3.31	2.17	2.91	2.36	36.46
(58-64) o	1.26	1.66	1.90	1.21	.26	.45	.11	.14	.18	.07	.17	.31	7.72
MEAN													
58 YR	3.06	2.53	3.17	3.51	3.85	4.09	4.21	4.36	3.45	2.85	2.81	2.86	40.75

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	1-25	.16	1-25	.12	1-9	.20	1-9	.39	1-9	.51	1-24	.64	1-24	.75	1-2	1.29

MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	6-24 1958	.48	6-12 1958	.28	6-24 1958	.37	9-19 1960	.69	2-18 1960	.93	2-18 1960	1.17	2-18 1960	1.31	2-18 1961	2.76

NOTES: Watershed conditions: Mixed cover, farm woods, predominantly hardwood, 53%; permanent pasture with a fair cover of native grass mixture, 44%; hay, 1%; paved roads, 2%. 1/ Precipitation Thiessen weighted from R-1 and R-2. 2/ Determined from continuous records from May, 1958 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 58-yr (1907-64) U.S. Weather Bureau record period at Culpeper, Virginia. Monthly records missing for Jan. through July 1907, Nov. 1949, Dec. 1950 and for Jan. through Apr. and July 1951.

WATERSHED DESCRIPTION						
SLOPES:	Slope-Percent	0-2	2-6	6-10	10-15	15+
	Percent of Area	-	46	19	30	5
SOILS:	Final correlation: Developed from sandstone, Triassic and baked shale and weathered diabase.					

Type	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to (in.)	Perme- ability	
Stony land basic rock	36	--	Stones 10 to 15" in diameter	Rapid	Stones and bedrock	Moderate	--	Moderately slow	Medium
Catlett silt loam	15	7	Weak fine granular	Moderately rapid	Very little definite structure	----	12	Moderately slow	Medium
Croton silt loam	11	9	Weak fine granular	Moderately slow	Weak to moderate medium subangular blocky	Slow	27	Very slow	Very slow
Penn silt loam	10	8	Moderate medium granular	Moderately rapid	Weak coarse granular	Moderate	13	Moderately slow	Medium
Kelly silt loam	8	5	Weak fine granular	Moderate	Weak fine to medium subangular blocky	Slow	28	Slow	Slow
Manassas silt loam	6	13	Moderate fine granular	Rapid	Weak fine subangular blocky	Moderate	28	Moderately slow	Medium
Montalto silt loam	5	5	Moderate medium granular	Rapid	Moderate medium subangular blocky	Moderate	24	Moderate	Medium
Bucks silt loam	3	6	Moderate fine granular	Rapid	Weak to moderate fine to medium subangular blocky	Moderately slow	28	Moderate	Medium
Very rocky land (basic rocks)	3	--	Bedrock and boulders occupy 60 to 90% of land surface			Very slow	--	Very slow	Slow
Brecknock silt loam	1	5	Moderate fine granular	Moderately rapid	Moderate medium to coarse subangular blocky	Moderately rapid	26	Moderately slow	Medium
Readington silt loam	1	9	Moderate fine granular	Moderate	Weak fine and medium subangular blocky	Moderately slow	17	Moderately slow	Slow
Calverton silt loam	1	12	Weak fine granular	Moderate	Moderate medium to coarse subangular blocky	Moderately slow	28	Slow	Slow

EROSION:	Erosion class	1	2	3
	Percent of area	43	54	3

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII
	Percent of area	-	19	22	15	-	39	5

CEOLOGY: The watershed lies in the Triassic formation with soils developed mostly from igneous rocks of sills and dikes, diabase, gabbro and shales as shown on the Ceologic map of Virginia by the Division of Mineral Resources (1963).

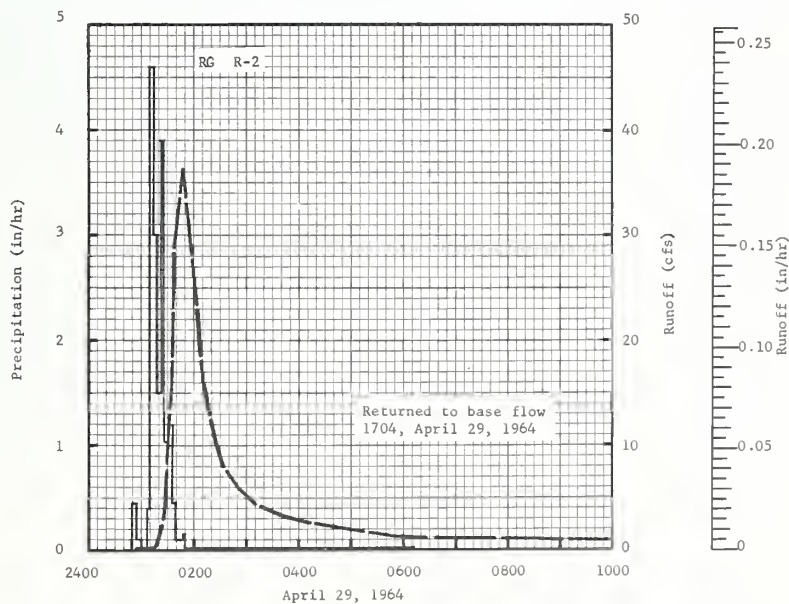
1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH W-I							13.12
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.98M	.03	.00	.04	.01	.06	.00	.00	.00	.14	.00	.00	
2	.00	.00	.14	.23	.00	.04	.00	.06	.00	.68	.00	.00	
3	.00	.00	.00	.01	.00	.00	.00	2.06	.00	T	.00	.05	
4	.00	.00	.04	.00	.00	.00	.00	.04	.00	.42	.00	.21	
5	.70	.00	.02	.00	.00	.02	.00	.00	.00	.00	.00	.44	
6	.12	1.31	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	
7	.3R	.00	.00	.25	.00	.00	.00	.00	.00	.00	.00	.00	
8	.00	.00	.28	.27	.00	.00	.24	.20	.00	.00	.00	.00	
9	1.18	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.00	.13S	.01	.00	.00	.00	.81	.00	.00	.00	.00	.00	
11	.00	.25S	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
12	.24S	.02S	.00	.00	.28	.00	2.11	.05	.00	.00	.00	.75	
13	.51S	.00	.00	.07	.79	.00	.04	.00	.40	.00	.00	.00	
14	.00	.00	.34	.45	.01	.00	.00	.00	.00	.00	.00	.00	
15	.00	.50M	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	
16	.00	.07M	.00	.00	.00	.16	.05	.13	.00	1.41	.00	.00	
17	.00	.00	.00	.00	.48	.00	.00	.00	.00	.09	.00	.00	
18	.00	.86M	.00	.00	.00	.00	.00	.08	.01	.00	.00	.00	
19	.00	.31M	.00	.48	.00	.00	.00	.00	1.81	.06	.40	.02L	
20	.22	.00	.01N	.62	.00	.00	.00	.00	.06	.00	.07	.23	
21	.00	.00	.55N	.01	.00	.17	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	.01	.00	.00	.08	.00	.00	.00	.00	.00	
23	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	
24	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
25	.73	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.77	.00	
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30	
27	.00	.00	.00	.16	.00	.00	.00	.02	.00	.00	.00	.69	
28	.00	.23S	.00	.06	.05	.00	.00	.25	.00	.00	.00	.00	
29	.00	.00	.03S	.88	.00	.00	.00	.94	.00	.00	.00	.00	
30	.00	-----	.27S	.08	.00	.00	.00	.15	.29	.00	.03L	.00	
31	.13	-----	.09S	-----	.00	-----	.00	-----	-----	.00	-----	.00	
TOTAL	4.83	3.71	2.33	3.91	1.62	.45	3.34	2.77	3.78	2.80	2.27	2.69	
STA AV	2.68	3.19	3.63	3.16	2.79	3.57	3.27	3.42	3.31	2.17	2.91	2.36	

NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1 AND R-2. STA AV IS FOR PERIOD MAY 1958 THROUGH 1964. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.12-7.

1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH W-I							13.12
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.33	.13	.15	.08	.29	.00	.00	.00	.00	.00	.00	.00	
2	.71	.06	.17	.14	.18	.00	.00	.00	.00	.09	.00	.00	
3	1.81	.04	1.32	.13	.12	.00	.00	.48	.00	.00	.00	.00	
4	.63	.03	.59	.06	.08	.00	.00	T	.00	.03	.00	.01	
5	.16	.03	.40	.04	.06	.00	.00	.00	.00	T	.00	.15	
6	.18	3.19	.18	.12	.03	.00	.00	.00	.00	.00	.00	.11	
7	1.35	.84	.13	.20	.03	.00	.00	.00	.00	.00	.00	.02	
8	.35	.33	.22	.55	.02	.00	.00	.00	.00	.00	.00	.07	
9	4.82	.18	.19	.27	.01	.00	.00	.00	.00	.00	.00	.01	
10	.90	.16	.11	.15	T	.00	.01	.00	.00	.00	.00	T	
11	.28	.36	.06	.10	T	.00	.00	.00	.00	.00	.00	T	
12	.18	.21	.06	.07	.01	.00	.31	.00	.00	.00	.00	.64	
13	.16	.18	.04	.08	.22	.00	.05	.00	.00	.00	.00	.13	
14	.14	.17	.13	.37	.04	.00	.00	.00	.00	.00	.00	.06	
15	.11	.33	.20	.14	.01	.00	.00	.00	.00	.00	.00	.02	
16	.08	1.18	.10	.08	T	.00	.00	.00	.00	.16	.00	.01	
17	.07	.51	.07	.06	.04	.00	.00	.00	.00	.17	.00	.01	
18	.05	.69	.05	.04	.01	.00	.00	.00	.00	T	.00	T	
19	.04	1.57	.04	.14	T	.00	.00	.00	.04	T	.00	T	
20	.22	1.21	.04	.77	T	.00	.00	.00	T	.00	.00	.01	
21	1.38	.56	.28	.50	.00	.00	.00	.00	.00	.00	.00	.01	
22	1.03	.31	.17	.28	.00	.00	.00	.00	.00	.00	.00	.01	
23	.64	.21	.10	.17	.00	.00	.00	.00	.00	.00	.00	.01	
24	.56	.16	.08	.12	.00	.00	.00	.00	.00	.00	.00	.01	
25	5.12	.11	.08	.08	.00	.00	.00	.00	.00	.00	.89	T	
26	.85	.11	.08	.05	.00	.00	.00	.00	.00	.00	.05	.04	
27	.38	.08	.06	.06	.00	.00	.00	.00	.00	.00	.01	1.00	
28	.19	.06	.04	.07	.00	.00	.00	.00	.00	.00	T	.37	
29	.11	.15	.03	2.07	.00	.00	.00	.00	.03	.00	T	.14	
30	.10	-----	.03	.50	.00	.00	.00	.00	.01	.00	.00	.08	
31	.07	-----	.07	-----	.00	-----	.00	-----	-----	.00	-----	.04	
MEAN	.74	.45	.17	.25	.04	.00	.01	.02	T	.01	.05	.09	
INCHES	2.85	1.63	.66	.93	.14	.00	.05	.06	.01	.06	.12	.36	

NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.123967.

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				PONY MOUNTAIN BRANCH W-I				13.12
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of April 29, 1964											
4-29	2 RG 1/ .00	2/.0003	4-29	RG	R-2		4-29	0054	.2677	.0001	
				0050	.00	.00		0112	.1450	.0002	
				0054	.45	.03		0116	.4254	.0003	
				0100	.10	.04		0120	1.4871	.0006	
				0107	.00	.04		0124	3.8058	.0015	
				0110	.40	.06					
				0113	4.60	.29		0126	5.8982	.0023	
				0119	3.00	.59		0130	10.6961	.0052	
				0121	1.50	.64		0132	14.9177	.0074	
				0123	3.90	.77		0134	22.5157	.0106	
				0130	1.03	.89		0136	28.3192	.0150	
				0135	1.20	.99		0148	36.3369	.0484	
				0140	.48	1.03		0200	25.9947	.0807	
				0146	.10	1.04		0208	18.5939	.0960	
				0150	.15	1.05		0216	13.8463	.1072	
				0612	.01	1.08		0228	9.9032	.1195	
				RG	R-1	.71		0308	4.8772	.1450	
				2 RG	AVG 1/ .81	.81		0332	3.6782	.1538	
								0400	2.9452	.1618	
								0432	2.3109	.1691	
								0524	1.7695	.1782	
								0548	1.5741	.1817	
								0556	1.4833	.1827	
								0616	1.3169	.1851	
								0632	1.3150	.1869	
								0640	1.2338	.1878	
								0656	1.2377	.1895	
								0740	1.1603	.1941	
								0755	1.1603	.1956	
								0844	1.0114	.2002	
								1140	.8161	.2140	
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0051653. FOR 30-DAY ANTECEDENT P & Q, SEE DAILY TABLES ON PREVIOUS PAGE. 1/ THIESSEN WEIGHTED FOR R-1 AND R-2. 2/ CONTINUOUS FLOW PRIOR TO 0054. 3/ NORMAL BASE FLOW.								1400	.7001	.2232	
								1612	.6459	.2308	
								1704	3/.6459	.2337	



BLACKSBURG, VIRGINIA PONY MOUNTAIN BRANCH W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA CHUB RUN W-I 13.13 AREA—2,023 ACRES (3.16 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	4.81 2.31	4.05 1.21	1.78 1.48	3.35 .85	1.42 .60	.95 .17	2.17 .07	2.24 .05	3.37 .03	3.07 .15	2.83 .25	2.78 .59	32.82 7.76			
STA AV 2/p (59-64) o	2.34 1.06	3.85 1.19	3.76 2.04	3.10 1.53	3.23 .88	3.97 .69	2.56 .24	2.73 .12	2.87 .10	2.24 .27	3.26 .46	2.39 .50	36.30 9.08			
MEAN P 3/																
24 YR	2.47	2.32	3.25	2.89	3.66	3.54	3.97	4.55	3.31	3.43	2.86	2.65	38.90			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	1-9	.03	1-9	.03	1-9	.06	1-9	.13	1-4	.21	1-3	.37	1-3	.46	1-3	1.03
MAXIMUMS FOR PERIOD OF RECORD																
1959 TO 1964	9-30 1959	.24	9-30 1959	.17	9-30 1959	.24	9-30 1959	.34	9-30 1959	.40	6-20 1962	.52	6-19 1962	.90	3-29 1960	1.58
NOTES: Watershed conditions: Mixed cover, farm woods, predominantly hardwoods mixed with conifers, 58%; permanent pasture, a fair cover of native grasses, 29%; corn, 2%; small grain, 1%; alfalfa and other hay crops, 6%; total cultivated, 9%; idle land, 3%; roads, 1%. 1/ Precipitation Thiessen weighted from R-1, R-2 and R-3. 2/ Determined from continuous records from September, 1959 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 24-yr (1941-64) U.S. Weather Bureau record period at Luray (5 miles E), Virginia. Missing monthly totals for Jan. and Feb. 1941 were estimated from nearby Weather Bureau records at Riverton, Va.																
GEOLOGY: The watershed lies mostly in an area classified as Precambrian, in the Pedlar formation of the Virginia Blue Ridge complex. Soils in this area have developed from granite, granodiorite, hypersthene granodiorite, syenite, quartz diorite, anorthosite and unakite. About 10% of the watershed located in the northwest corner, delineated by a fault, lies in an area classified as Cambrian, in the Chilhowee group formations of Erwin and Hampton with soils which have developed from sandstone, shale and quartzite. Information taken from the Geologic Map of Virginia, 1963, prepared by the Division of Mineral Resources.																
1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA CHUB RUN W-I 13.13										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	1.67M	.01	.00	T	.00	.11	.00	.00	.01	.05	.00	.00				
2	.00	.00	.15	.14	.00	.00	.24	.01	.00	.76	.00	.00				
3	.00	.00	.11	.04	.07	.04	.00	.77	.00	.00	.00	.08				
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	.26				
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.49				
6	.17S	1.16	.00	.15	.00	.11	.00	.00	.00	.00	.00	.01				
7	.16S	.00	.00	.10	.00	.14	.00	.00	.00	.00	.00	.00				
8	.00	.00	.35	.43	.00	.00	.21	.88	.00	.00	.00	.00				
9	.87S	.03M	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	.11M	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00				
11	.00	.22M	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00				
12	.18S	.00	.00	.00	.19	.00	1.51	.02	.03	.00	.00	.95				
13	.66S	.00	.00	.20	.82	.00	.00	.00	.14	.00	.00	.00				
14	.00	.00	.31	.27	.00	.00	.00	.00	.00	.00	.00	.00				
15	.00	.48M	.20	T	.00	.08	.00	.00	.05	.00	.00	.00				
16	.00	.00	.00	.00	.00	.02	.00	.06	.00	1.68	.00	.00				
17	.00	.00	.00	.00	.14	.00	.00	.00	.00	.35	.00	.00				
18	.00	1.09	.00	.00	.00	.00	.00	.11	.08	.01	.02	.00				
19	.00	.53	.00	.58	.04	.00	.00	.00	.32	.12	.20	.06M				
20	.64	.00	T	.56	.00	.24	.18	.00	.76	.00	.09	.04M				
21	.00	.00	.35	.00	.00	.16	.00	.00	.00	.00	.00	.00				
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
24	.24	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00				
25	.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.43	.09				
26	.00	.00	.02	.00	.00	.00	.00	.05	.00	.00	.00	.25				
27	.00	.00	.00	.24	.00	.00	.00	.00	.00	.00	.00	.55				
28	.00	.42S	.00	.01	.16	.00	.00	.00	.70	.00	.00	.00				
29	.00	.00	.00	.54	.00	.00	.00	.00	.72	.02	.00	.00				
30	.00	-----	.22S	.07	.00	.00	.00	.17	.56	.00	.09	.00				
31	.16	-----	.22S	-----	.00	-----	.00	.17	-----	.00	-----	.00				
TOTAL	4.81	4.05	1.78	3.35	1.42	.95	2.17	2.24	3.37	3.07	2.83	2.78				
STA AV	2.34	3.85	3.76	3.10	3.23	3.97	2.56	2.73	2.87	2.24	3.26	2.39				
NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1, R-2 AND R-3. STA AV IS FOR PERIOD SEPTEMBER 1959 THROUGH 1964. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 13.13-5.																

1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA				CHUB RUN W-I		13.13
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.73	3.15	3.18	1.76	2.89	.85	.18	.07	.09	.29	.26	1.00
2	2.40	2.74	5.59	1.81	2.79	.81	.21	.08	.05	.90	.26	.96
3	9.73	2.41	10.78	1.76	2.72	.73	.26	.49	.03	.34	.26	.93
4	27.63	2.22	11.28	1.65	2.56	.69	.21	.22	.02	.24	.26	1.20
5	3.93	2.11	8.79	1.58	2.40	.65	.21	.15	.01	.22	.26	1.50
6	7.27	9.21	7.14	1.90	2.23	.75	.18	.12	.01	.17	.26	2.28
7	10.90	6.76	5.82	1.85	2.11	.66	.15	.10	.01	.14	.26	1.71
8	3.76	4.86	5.76	2.49	2.04	.69	.23	.77	.01	.13	.26	1.46
9	17.52	4.09	5.29	2.06	1.90	.69	.18	.22	.01	.13	.24	1.34
10	5.99	3.73	4.54	1.89	1.84	.55	.15	.13	T	.11	.23	1.21
11	3.87	3.43	3.96	1.83	1.77	.49	.13	.13	T	.11	.23	1.16
12	3.14	3.47	3.68	1.76	1.77	.49	.67	.12	.02	.11	.23	4.12
13	2.86	3.33	3.44	1.81	2.80	.49	.51	.10	.09	.11	.23	2.92
14	2.75	3.44	3.81	2.38	2.13	.54	.25	.09	.06	.11	.23	2.24
15	2.55	3.38	3.89	1.96	1.77	.48	.18	.09	.03	.11	.23	1.89
16	2.39	4.67	3.28	1.89	1.62	.43	.17	.11	.01	.66	.23	1.68
17	2.12	3.81	3.05	1.83	1.54	.37	.16	.12	.01	2.62	.23	1.60
18	1.85	3.62	2.81	1.76	1.42	.37	.14	.13	.01	.99	.25	1.37
19	1.76	3.43	2.67	2.39	1.32	.36	.13	.12	.08	.71	.34	1.47
20	6.57	3.23	2.70	3.66	1.22	.34	.21	.09	.36	.60	.32	1.33
21	7.99	3.04	2.96	4.51	1.16	.44	.19	.08	.11	.48	.26	1.14
22	6.68	2.86	2.79	3.86	1.11	.38	.15	.05	.08	.43	.25	1.06
23	6.01	2.74	2.47	3.42	1.02	.32	.15	.06	.08	.38	.24	1.04
24	7.15	2.56	2.25	3.14	1.01	.28	.14	.04	.06	.33	.26	1.01
25	19.63	2.44	2.16	2.86	.88	.24	.14	.04	.04	.32	5.27	1.01
26	7.88	3.04	2.08	2.63	.84	.23	.13	.04	.04	.30	3.67	1.15
27	6.09	3.39	1.96	2.63	.77	.21	.12	.02	.04	.30	2.02	2.30
28	4.80	3.03	1.89	2.55	.84	.20	.10	.02	.19	.30	1.58	2.41
29	3.91	2.92	1.89	3.38	.85	.18	.10	.01	.52	.28	1.31	2.01
30	3.52	-----	1.88	3.08	.77	.16	.09	.06	.77	.26	1.16	1.89
31	3.16	-----	1.77	-----	.77	-----	.08	.13	-----	.26	-----	1.63
MEAN	6.34	3.56	4.05	2.40	1.64	.47	.19	.13	.09	.41	.70	1.61
INCHES	2.31	1.21	1.48	.85	.60	.17	.07	.05	.03	.15	.25	.09

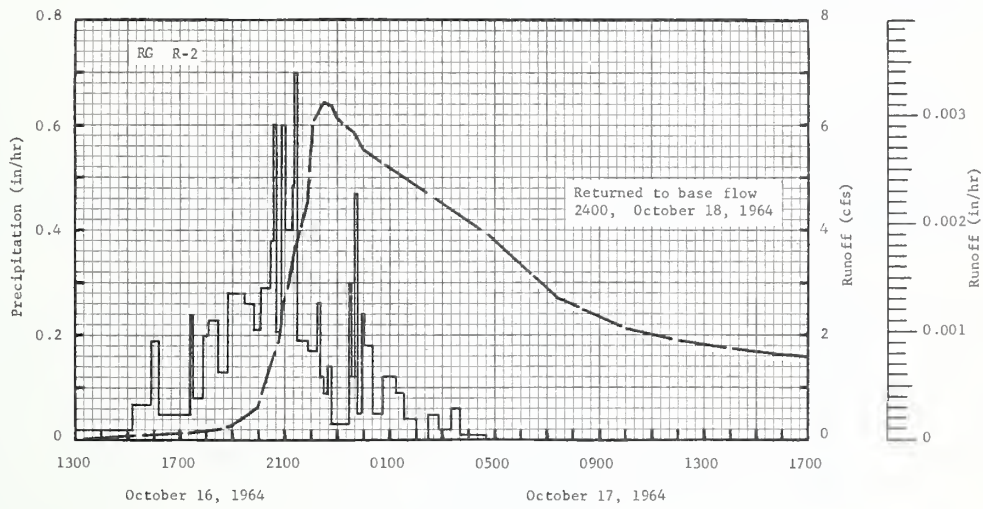
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.011766.

1964			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA				CHUB RUN W-I		13.13
ANTECEDEENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of October 16, 17 and 18, 1964													
10-16	3 RG 1/ .00	2/.0007	10-16	RG	R-2		10-16	1320	.0816	.0000			
				1300	.00	.00		1540	.1224	.0001			
				1510	.02	.05		1632	.1428	.0002			
				1554	.07	.10		1740	.1632	.0002			
				1610	.19	.15		1820	.2040	.0003			
				1710	.05	.20							
				1722	.05	.21		1900	.2652	.0004			
				1727	.24	.23		1938	.4692	.0005			
				1750	.08	.26		2000	.6324	.0006			
				1802	.20	.30		2013	.8771	.0007			
				1825	.23	.39		2041	1.8359	.0010			
				1653	.13	.45		2046	2.3866	.0011			
				1910	.28	.53		2056	2.6722	.0013			
				1925	.28	.60		2108	2.9782	.0015			
				1948	.26	.70		2120	3.5493	.0019			
				2002	.21	.75		2152	4.4877	.0029			
Watershed conditions:													
Woods, mixture of hardwoods (leaves on trees) and conifers, good cover, 58%; pasture, green but short, fair cover, 29%; hay mostly alfalfa 3 to 6 in. tall, good cover, 6%; idle, good cover of dormant weeds and grass 3%; fallow land, poor cover, 1%; small grain, 2 to 3 in. tall, fair cover, 2%; paved road, 1%.													
				2023	.29	.85	10-17	2155	5.2016	.0030			
				2031	.38	.90		2200	5.6504	.0033			
				2036	.60	.95		2212	6.1400	.0038			
				2050	.21	1.00		2228	6.4051	.0047			
				2100	.60	1.10		2252	6.5847	.0059			
				2115	.40	1.20		2400	6.1196	.0094			
				2120	.46	1.24		0040	5.8544	.0113			
				2126	.70	1.31		0200	5.5892	.0151			
				2155	.19	1.40		0240	5.3036	.0169			
				2213	.17	1.45		0444	5.8961	.0215			
				2220	.26	1.48		0720	2.7742	.0258			
				2225	.12	1.49		1000	2.1622	.0290			
				2232	.09	1.50		1200	1.8971	.0310			
				2245	.14	1.53		1540	1.6319	.0347			
				2326	.03	1.55		1900	1.4891	.0368			

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0004902. FOR 30-DAY ANTECEDENT P & Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ THIESSEN WEIGHTED AVERAGE FOR RG R-1, R-2 AND R-3. 2/ CONTINUOUS FLOW PRIOR TO 1320.

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				CHUB RUN W-I				13.13
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of October 16, 17 and 18, 1964 - Continued											
				RG	R-2						
			10-16	2328	.30	1.56	10-17	2400	1.3872	.0403	
				2333	.12	1.57	10-18	0340	1.1832	.0426	
				2342	.47	1.64		1000	.9792	.0460	
				2355	.05	1.65		1220	.9180	.0471	
				2400	.24	1.67		1800	.8364	.0495	
			10-17	0020	.18	1.73		2400	1/ .8364	.0520	
				0044	.05	1.75					
				0110	.12	1.80					
				0130	.09	1.83					
				0200	.04	1.85					
				0228	.00	1.85					
				0250	.05	1.87					
				0320	.02	1.88					
				0340	.06	1.90					
				0440	.01	1.91					
				RG	R-3						
			10-16	1330	.00	.00					
				1500	.01	.01					
				1510	.06	.02					
				1540	.06	.05					
				1550	.12	.07					
				1600	.30	.12					
				1612	.15	.15					
				1658	.05	.19					
				1750	.13	.30					
				1830	.20	.43					
				1850	.18	.49					
				1910	.30	.59					
				1914	.60	.63					
				1940	.16	.70					
				2005	.24	.80					
				2044	.35	1.03					
				2100	.15	1.07					
				2107	.51	1.13					
				2115	.15	1.15					
				2131	.60	1.31					
				2150	.13	1.35					
				2155	.60	1.40					
				2217	.14	1.45					
				2254	.16	1.55					
				2332	.08	1.60					
				2339	.17	1.62					
				2342	.80	1.66					
				2400	.27	1.74					
			10-17	0010	.18	1.77					
				0020	.18	1.80					
				0056	.08	1.85					
				0120	.13	1.90					
				0200	.08	1.95					
				0238	.03	1.97					
				0325	.03	1.99					
				0340	.04	2.00					
				0600	.01	2.02					
				RG	R-1	1.67					
				3 RG	AVG 2/	1.94					

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0004902. 1/ NORMAL BASE FLOW. 2/ THIESSEN WEIGHTED FOR RG R-1, R-2 AND R-3.



BLACKSBURG, VIRGINIA CHUB RUN W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)						BLACKSBURG, VIRGINIA FOSTERS CREEK W-I 13.14 AREA—389 ACRES							
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964	4.64	4.70	1.85	3.36	.91	1.88	2.87	1.49	1.98	2.94	2.58	3.79	32.99
P ₁	2.13	2.09	.72	.81	.31	.16	.12	.04	.01	.13	.30	.97	7.79
STA AVG ² / _P	2.70	3.85	4.08	2.65	2.72	2.97	2.97	2.46	3.06	3.42	3.23	3.15	37.26
(60-64) _P	1.44	2.20	2.40	1.22	.78	.36	.26	.15	.12	1.52	.44	.77	11.66
MEAN ³ / _P													
49 YR	3.32	2.86	3.62	3.43	3.41	3.53	4.57	4.24	3.19	2.84	2.77	3.00	40.78

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	12-27	.11	12-27	.11	12-27	.19	12-27	.40	12-27	.51	12-27	.59	12-26	.65	2-13	1.20

MAXIMUMS FOR PERIOD OF RECORD																
19 60-70	10-20	1.71	10-20	.76	10-20	1.02	10-20	2.06	10-20	3.02	10-20	4.96	10-20	5.89	10-20	5.96
19 64	1961		1961		1961		1961		1961		1961		1961		1961	

NOTES: Watershed conditions: Mixed cover; farm woods, predominantly hardwoods, 45%; permanent pasture, usually a good cover of native grass and clover mixture, 26%; corn, 2%; hay mixtures such as alfalfa, orchardgrass, lespedeza and other clovers, 23%; small grain, 2%; total cultivated, 27%; paved roads, 2%. 1/ Precipitation Thiessen weighted from R-1 & R-2. 2/ Determined from continuous records from September, 1960 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 49-yr (1916-64) U.S. Weather Bureau record period at Louisa, Va., Records at Mineral, Va. utilized to 1940. During change over, months of Jan. and Feb. 1941 and Mar., Oct., Nov. and Dec. 1940, has missing records.

WATERSHED DESCRIPTION

SLOPES:

Slope- Percent	0-2	2-7	7-15	15-25	25+
Percent of Area	4	72	21	3	0

SOILS: Final correlation: Developed mostly from quartz sericite schist, hornblende gneiss and phyllite.

Type	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to (in.)	Permeability	
Nason silt loam	45	6	Weak fine granular	Moderate	Weak to moderate fine, medium and coarse, subangular & angular blocky	Slow	30	Slow	Slow
Tatum silt loam	23	6	Weak fine granular	Moderate	Weak to moderate medium to coarse subangular & angular blocky	Moderately slow	30	Moderate	Medium
Fluvanna very fine sandy loam	9	10	Weak to moderate fine to medium granular	Moderate	Weak to moderate fine to medium subangular and angular blocky	Moderately slow	38	Slow	Medium
Lignum loam	6	9	Weak to moderate fine granular	Moderately slow	Weak to moderate fine to medium subangular blocky	Slow	34	Slow	Slow
Tatum silty clay loam	6	-	-----	-----	Weak to moderate medium to coarse subangular to angular blocky	Moderately slow	24	Moderate	Medium
Mixed alluvial land	4	varies	Very little structure	Moderately rapid	Very little structure	Moderately slow	48	Slow	Slow
Seneca silt loam	3	8	Weak to moderate medium, granular & subangular blocky	Moderately rapid	Weak to moderate medium subangular blocky	Moderate	40	Moderately slow	Medium
Worsham silt loam	3	16	Weak fine granular	Moderately slow	Weak to moderate medium subangular blocky	Slow	44	Slow	Slow
Manteo silt loam	1	5	Weak fine granular	Moderately rapid	-----	--	20	Moderately slow	Medium

EROSION:

Erosion class	1	2	3
Percent of area	28	65	7

LAND CAPABILITY:

Class	I	II	III	IV	V	VI	VII
Percent of area	0	64	20	12	3	1	0

GEOLOGY: The watershed is located in an area of uncertain age with soils developed from metamorphosed sedimentary and interlayered igneous rocks including kyanite schist and kyanite quartzite which overlie the Virginia Blue Ridge complex. Information taken from the Geologic Map of Virginia (1963) produced by the Division of Mineral Resources.

1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.79M	.11	.00	.02	.00	.07	.00	.00	.00	1.09	.00	.00
2	.03	.00	.13	.09	.00	.25	.30	.05	.00	.15	.00	.00
3	.00	.00	.27	.00	.00	.00	.12	.57	.00	.00	.00	.08
4	.00	.00	.04	.00	.00	.00	.00	.03	.00	.65	.00	.27
5	.00	.00	.05	.00	.00	.00	.00	.30	.00	.00	.00	.25
6	.18	1.48	.00	.26	.00	.00	.00	.00	.00	.00	.00	.04
7	.30	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.14	.13	.00	.00	.09	.30	.00	.00	.00	.00
9	1.03	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00
10	.00	.24	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00
11	.00	.24	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00
12	.29S	.09	.00	.00	.01	.00	1.85	.06	.08	.00	.00	.75
13	.33S	.00	.00	.12	.22	.01	.03	.00	.47	.00	.00	.01
14	.00	.00	.20	.23	.00	.35	.00	.00	.00	.00	.00	.00
15	.00	1.27	.34	.00	.00	.00	.00	.00	.00	.03	.00	.00
16	.00	.05	.00	.00	.00	.00	.00	.09	.00	.78	.00	.00
17	.00	.00	.00	.00	.43	.00	.02	.00	.00	.24	.00	.00
18	.00	.93	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.06	.05	.00	.84	.00	.91	.00	.00	.23	.00	.80	.04
20	.24	.00	.06	.49	.00	.11	.00	.00	.25	.00	.14	.20
21	.00	.00	.47	.04	.00	.18	.24	.00	T	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.49	.00	.00	.00	.01	.00	.10	.00	.00	.00	.01	.00
25	.67	.02	.00	.00	.00	.00	.00	.06	.00	.00	1.63	.02
26	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.59
27	.00	.00	.00	.32	.09	.00	.00	.00	.00	.00	.00	1.54
28	.00	.22	.00	.06	.12	.00	.00	.00	.23	.00	.00	.00
29	.00	.00	.00	.55	.03	.00	.00	.00	.48	.00	.00	.00
30	.00	-----	.09	.02	.00	.00	.00	.11	.24	.00	.00	.00
31	.23	-----	.06	-----	.00	-----	.00	.31	-----	.00	-----	.00
TOTAL	4.64	4.70	1.85	3.36	.91	1.88	2.67	1.49	1.98	2.94	2.58	3.79
STAAV	2.70	3.85	4.08	2.65	2.72	2.97	2.97	2.46	3.06	3.42	3.23	3.15

NOTES: PRECIPITATION AMOUNTS ARE THIESSEN WEIGHTED VALUES FROM RAIN GAGES R-1 AND R-2. STA AV IS FOR PERIOD SEPTEMBER 1960 THROUGH 1964. FOR DRAINAGE PATTERN MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, MISC. PUB. 994, P. 13.14-4.

1964 MEAN DAILY DISCHARGE (cfs)						BLACKSBURG, VIRGINIA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.31	.54	.41	.25	.38	.11	.03	.02	.02	.22	.05	.11
2	1.67	.29	.36	.29	.30	.16	.05	.03	T	.08	.05	.11
3	3.19	.24	1.01	.28	.30	.11	.06	.09	T	.04	.05	.10
4	1.76	.23	.51	.25	.24	.09	.06	.06	.00	.17	.05	.19
5	.95	.21	.51	.25	.22	.09	.04	.04	.00	.06	.05	.19
6	.53	7.06	.35	.33	.20	.09	.03	.03	.00	.04	.06	.26
7	2.48	1.16	.31	.47	.19	.09	.03	.02	.00	.04	.06	.13
8	.51	.49	.35	.45	.19	.08	.04	.02	.00	.03	.06	.11
9	6.76	.33	.38	.33	.17	.08	.05	.02	.00	.03	.06	.11
10	1.01	.30	.33	.28	.15	.07	.05	.02	.00	.04	.06	.11
11	.40	.34	.29	.25	.15	.07	.03	.04	.00	.04	.06	.10
12	.29	.31	.28	.25	.16	.08	.39	.03	.00	.04	.06	.83
13	.26	.34	.25	.26	.20	.08	.24	.01	.01	.04	.06	.27
14	.23	.80	.34	.43	.17	.11	.07	.01	.01	.03	.06	.17
15	.20	2.98	.62	.30	.15	.09	.05	.01	T	.04	.06	.12
16	.18	6.43	.42	.25	.15	.07	.05	.02	.00	.16	.06	.12
17	.17	1.10	.34	.25	.24	.06	.05	.03	.00	.20	.06	.12
18	.18	2.84	.29	.23	.17	.06	.05	.02	.00	.07	.05	.13
19	.22	3.85	.28	1.19	.13	.23	.05	.01	.01	.05	.25	.13
20	1.55	1.07	.29	1.35	.12	.10	.05	.01	.02	.05	.13	.16
21	1.53	.53	.83	1.02	.11	.09	.06	T	.01	.05	.09	.15
22	.74	.41	.51	.50	.11	.09	.06	T	.01	.05	.07	.13
23	.44	.33	.34	.36	.10	.09	.05	T	T	.05	.07	.13
24	.40	.32	.31	.30	.08	.08	.07	T	.00	.06	.07	.13
25	5.71	.31	.31	.25	.10	.07	.06	T	.00	.06	2.44	.13
26	.84	.30	.29	.25	.10	.06	.06	T	.00	.06	.30	.40
27	.40	.28	.25	.29	.10	.05	.04	T	.00	.06	.13	8.54
28	.29	.31	.25	.47	.12	.04	.04	T	.01	.06	.11	2.14
29	.23	.42	.25	1.32	.11	.04	.03	.01	.05	.06	.11	.37
30	.23	-----	.25	.58	.09	.03	.03	.02	.06	.06	.11	.14
31	.22	-----	.25	-----	.10	-----	.02	.03	-----	.05	-----	.13
MEAN	1.13	1.18	.38	.44	.16	.09	.06	.02	.01	.07	.16	.51
INCHES	2.13	2.09	.72	.81	.31	.16	.12	.04	.01	.13	.30	.97

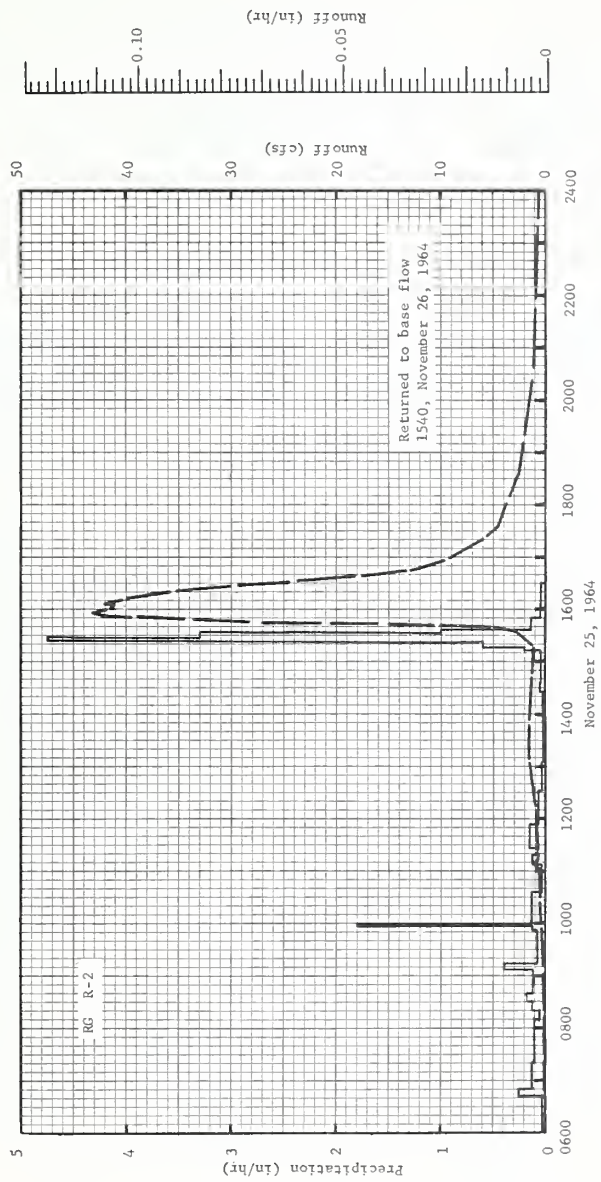
NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.061187.

1964			SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA		FOSTERS CREEK W-1		13.14
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of November 25-26, 1964											
11-25	2 RG 1/ .00	2/.0014	11-25	RG	R-2		11-25	0648	.0824	.0000	
				0040	.00	.00		0800	.1138	.0003	
				0643	.02	.05		0832	.1138	.0004	
				0650	.26	.08		0900	.1373	.0006	
				0720	.12	.14		0912	.1609	.0007	
				0810	.10	.22					
				0820	.06	.23		0936	.1844	.0009	
				0830	.12	.25		0948	.2158	.0010	
				0840	.18	.28		1012	.3139	.0012	
				0909	.12	.34		1040	.4866	.0017	
				0912	.40	.36		1100	.5259	.0021	
				0952	.09	.42		1106	.6122	.0023	
				0957	.12	.43		1112	.7103	.0024	
				0958	1.80	.46		1120	.7338	.0027	
				1036	.14	.55		1148	.9104	.0037	
				1108	.06	.58		1204	.9771	.0043	
				1118	.12	.60		1246	1.3421	.0064	
				1125	.09	.61		1252	1.3382	.0067	
				1154	.17	.69		1304	1.4245	.0074	
				1232	.09	.75		1340	1.4912	.0097	
				1305	.04	.77		1344	1.4794	.0099	
				1350	.03	.79		1516	1.0752	.0149	
				1425	.02	.80		1520	1.2165	.0151	
				1435	.06	.81		1532	2.4291	.0160	
				1514	.05	.84		1540	4.6973	.0172	
				1517	.20	.85		1543	12.2045	.0183	
				1523	.60	.91		1545	21.1400	.0197	
				1529	4.70	1.38		1546	26.7871	.0207	
				1533	3.30	1.60		1549	36.4721	.0248	
				1536	1.00	1.65		1552	41.1420	.0297	
				1550	.13	1.68		1556	43.1238	.0369	
				1630	.04	1.71		1558	42.5744	.0405	
				RG	R-1	1.56		1604	41.0832	.0512	
				2 RG	AVG 1/	1.63		1606	42.0995	.0547	
			1615	38.9013	.0702						
			1623	33.5603	.0825						
			1630	25.2370	.0912						
			1638	18.4401	.0987						
			1644	13.2130	.1027						
			1701	8.8453	.1106						
			1720	6.0865	.1167						
			1736	4.7758	.1204						
			1756	3.9400	.1241						
			1832	2.7902	.1292						
			1908	2.1701	.1330						
			1940	1.8483	.1357						
			2020	1.4598	.1385						
			2100	1.2244	.1408						
			2140	1.0674	.1428						
			2220	.9379	.1445						
			2320	.8123	.1467						
			2400	.7456	.1480						
			0300	.4905	.1527						
			0620	.3336	.1563						
			0940	.2747	.1588						
			1200	.2433	.1604						
			1540	3/.2158	.1625						

Watershed conditions: Woods, predominantly hardwoods, some conifers, good cover, 45%; pasture, mostly dormant grass 1 to 2 in. tall, fair cover, 26%; hay stubble, dormant 4 to 6 in. tall, good cover, 23%; small grain 3 to 4 in. tall, fair cover 2%; corn stubble mixed with dormant grass and weeds, fair cover 2%; paved roads, 2%.

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0025495. FOR 30-DAY ANTECEDENT P & Q, SEE DAILY TABLES ON PREVIOUS PAGE.
1/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 2/ CONTINUOUS FLOW PRIOR TO 0648. 3/ NORMAL BASE FLOW.

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0025495. FOR 30-DAY ANTECEDENT P & Q, SEE DAILY TABLES ON PREVIOUS PAGE.
 1/ THIESSEN WEIGHTED FOR RG R-1 AND R-2. 2/ CONTINUOUS FLOW PRIOR TO 0648. 3/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA FOSTERS CREEK W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)							BLACKSBURG, VIRGINIA CHESTNUT BRANCH W-I AREA—1058 ACRES (1.65 SQ. MILES)								13.15
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1964	P 1/2 Q	4.90 1.68	4.20 1.43	2.10 .71	2.39 .55	2.28 .33	.97 .17	5.34 .23	2.05 .11	2.30 .10	1.82 .19	3.05 .32	3.52 .62	34.92 6.44	
STA AVG (60-64)	P 2/3 Q	2.73 1.15	4.06 1.44	3.98 1.68	2.39 .99	2.66 .54	3.49 .59	3.42 .35	2.28 .25	3.58 .26	2.22 .39	3.97 .71	3.14 .84	37.92 9.19	
MEAN 34 YR	P 2/3 Q	3.37	3.06	4.09	3.38	3.89	4.41	4.51	4.94	3.35	2.92	3.09	3.37	44.38	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-22	.05	7-22	.03	1-24	.06	1-24	.14	1-24	.23	1-24	.32	1-24	.38	1-20	.73

MAXIMUMS FOR PERIOD OF RECORD																
19 60 TO 19 64	11-6 1961	.26	11-6 1961	.19	11-6 1961	.27	11-6 1961	.35	3-11 1962	.43	3-11 1962	.60	3-11 1962	.75	2-18 1961	1.42

Notes: Watershed conditions: Permanent pasture, usually a good cover of native grass mixture, 22%; farm woods, a mixture of hardwoods and pine, 37%; mixed cover; corn, 5%; small grain, 5% tobacco, 1%; hay mixture such as alfalfa, red clover, lespedeza and native grasses, 22%; total cultivated, 33%; idle land with good cover of weeds and annual grasses, 7%; roads, mostly paved, 1%. 1/ Precipitation Thiessen weighted from R-1, R-2 and R-3. 2/ Determined from continuous records from September, 1960 through 1964, precipitation Thiessen weighted. 3/ Mean P based on 34-yr (1931-64) U.S. Weather Bureau record period at Bedford, Va. Missing totals for 16 months were estimated from nearby Weather Bureau records at Lynchburg, Va. (Airport).

WATERSHED DESCRIPTION								
SLOPES:		Slope-Percent	0-2	2-7	7-15	15-25	24-45	45+
		Percent of Area	5	29	30	19	12	5

SOILS: Final correlation: Developed mostly from acidic and quartz mica gneiss, acidic and quartz mica schist, mixed acidic and basic igneous and metamorphic rocks.

Type	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage				
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to in.	Perme- ability					
Cecil fine sandy loam and Cobbly fine sandy loam	16	6	Weak to moderate fine to medium granular	Moderately rapid	Moderate medium subangular blocky	Moderate	55	Moderately rapid	Medium				
Brandywine loam and Brandywine stony loam	15	6	Weak to moderate fine to medium granular	Rapid	Weak fine subangular blocky	Rapid	12	Rapid	Rapid				
Lloyd loam and Lloyd clay loam	13	4	Weak fine granular	Moderate	Moderate fine to medium subangular blocky	Moderate	45	Moderately rapid	Medium				
Dyke loam, clay loam and silty clay loam	12	8	Moderate fine to medium granular	Moderate to moder- ately rapid	Moderate to strong, fine to medium, angular & subangular blocky	Moderate	80	Moderate	Medium				
Turbeville fine sandy loam	8	6	Moderate fine and medium subangular blocky	Moderately rapid	Weak and moderate fine to medium subangular blocky	Moderate	115	Rapid to moderate	Medium				
Mixed alluvial & wet mixed alluvial land	7	10	-----	Moderately rapid	-----	Moderate to slow	24 to 120	Rapid to very slow	Slow to very slow				
Madison clay loam	5	7	Moderate medium granular	Moderate	Moderate medium subangular blocky	Moderate	32	Moderately rapid	Medium				
Madison clay loam dark red subsoil	5	7	Moderate medium granular	Moderate	Weak to moderate medium to coarse subangular blocky	Moderate	34	Moderately rapid	Medium				
Starr loam	5	6	Weak fine granular	Moderately rapid	Structureless to weak medium to coarse subangular blocky	Moderate	36	Rapid to very slow	Medium				
Colfax cobbly fine sandy loam	4	7	Moderate medium granular	Moderately rapid	Weak to moderate medium subangular blocky	Slow to very slow	65	Moderate to very slow	Slow to very slow				
Wilkes fine sandy loam	4	4	Weak fine granular	Rapid	-----	-----	4	Moderately rapid to slow	Medium				
Hiwassee loam	3	6	Weak & moderate fine & medium granular	Moderately rapid	Weak to moderate fine to medium subangular blocky	Moderate	52	Rapid to slow	Medium				
Tusquitee fine sandy loam	1	8	Moderate medium granular	Moderately rapid	Weak medium to coarse subangular blocky	Moderately rapid	41	Moderately rapid	Medium				
State fine sandy loam	1	8	Weak medium granular	Moderately rapid	Weak medium to coarse subangular blocky	Moderately rapid	20	Moderately rapid	Medium				
Stony land	1		Stones greater than 10 in. diameter, located on average from 2½ to 5 ft. apart covering 3 to 90 percent of area. Profile permeability = moderately rapid										Medium

WATERSHED DESCRIPTION—CONTINUED

EROSION:	Erosion class	1	2	3
	Percent of area	35	42	23

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII
	Percent of area	5	15	24	20	-	16	20

GEOLOGY: The watershed is located in an area classified as Precambrian with rock formations of Lynchburg gneiss (mica gneiss and mica schist) and intrusive granite gneiss as mapped by the Virginia Geological Survey on their statewide map.

1964 DAILY PRECIPITATION (inches)						BLACKSBURG, VIRGINIA							CHESTNUT BRANCH W-1 13.15		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC			
1	.74M	.02	.00	.00	.00	.08	.00	.00	.00	.47	.00	.00			
2	.00	.00	.12	.02L	.01	.27	.15	.00	.00	.29	.00	.00			
3	.00	.00	.07	.26	.17	.00	.00	.09	.00	.00	.00	.17			
4	.00	.00	.08	.00	.00	.00	.08	.00	.00	.70	.00	.26			
5	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.35			
6	.24	1.34	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00			
7	.25	.00	.00	.32	.00	.01	.00	.00	.00	.00	.00	.00			
8	.02	.00	.23	.12	.00	.01	.01	.00	.00	.00	.18	.00			
9	.82	.05S	.00	.00	.00	.00	.22	.00	.00	.00	.00	.00			
10	.00	.14S	.07	.00	.00	.00	.00	.04	.00	.00	.00	.00			
11	.00	.21S	.00	.00	.00	.00	.00	.00	.23	.00	.00	.00			
12	.25S	.00	.00	.00	.38	.00	.99	.01	.04	.00	.00	.68			
13	.30S	.00	.00	.33	.42	.06	.01	.00	.28	.00	.00	.00			
14	.00	.00	.41	.39	.00	.00	.00	.00	.00	.00	.00	.00			
15	.00	1.04M	.41	.00	.00	.00	.00	.00	.00	.00	.00	.00			
16	.00	.03M	.00	.00	.00	.00	.00	.08	.00	.36	.00	.00			
17	.00	.00	.00	.00	.33	.00	.02	.00	.00	.00	.00	.08			
18	.00	.96M	.00	.00	.00	.00	.16	.19	.01	.00	.00	.00			
19	.00	.00	.00	.06	.00	.06	.05	.01	.56	.00	.62	.13			
20	.66	.00	.19S	.07	.00	.00	.01	.00	.36	.00	.15	.31			
21	.00	.00	.28S	.00	.00	.48	.83	.00	.00	.00	.00	.00			
22	.00	.00	.00	.00	.00	.00	2.04	.00	.00	.00	.00	.00			
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
24	1.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00			
25	.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.98	.13			
26	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.57			
27	.00	.00	.00	.48	.00	.00	.00	.00	.00	.00	.00	.84			
28	.00	.41S	.00	.03	.85	.00	.00	.00	.07	.00	.00	.00			
29	.00	.00	.00	.08	.12	.00	.62	.02	.56	.00	.00	.00			
30	.00	-----	.00	.03	.00	.00	.15	1.18	.19	.00	.08S	.00			
31	.20	-----	.00	-----	.00	-----	.00	.43	-----	.00	-----	.00			
TOTAL	4.90	4.20	2.10	2.39	2.28	.97	5.34	2.05	2.30	1.82	3.05	3.52			
STA AV	2.73	4.06	3.98	2.39	2.66	3.49	3.42	2.28	3.58	2.22	3.97	3.14			

NOTES: PRECIPITATION VALUES ARE THIESSEN WEIGHTED AMOUNTS FROM RAIN GAGES R-1, R-2, AND R-3. STA AV IS FOR PERIOD SEPTEMBER 1960 THROUGH 1964. FOR DRAINAGE PATTERN MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, MISC. PUB. 994, P. 13.15-5.

1964 MEAN DAILY DISCHARGE (cfs)					BLACKSBURG, VIRGINIA		CHESTNUT BRANCH W-I		13.15			
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.14	1.12	1.08	.72	.63	.39	.14	.21	.17	.40	.25	.42
2	.18	.90	1.03	.75	.61	.49	.14	.20	.12	.37	.25	.42
3	4.18	.82	1.22	.84	.70	.40	.16	.19	.12	.31	.25	.44
4	2.37	.78	1.22	.79	.63	.33	.17	.24	.12	.83	.25	.58
5	1.40	.80	1.07	.76	.55	.33	.15	.22	.10	.41	.23	.70
6	1.44	9.09	.98	.90	.55	.33	.11	.18	.09	.28	.23	.84
7	5.44	2.66	.96	1.07	.55	.31	.09	.17	.09	.24	.25	.64
8	2.02	1.72	1.07	.94	.53	.31	.08	.16	.09	.22	.27	.58
9	8.11	1.39	1.05	.77	.48	.29	.13	.15	.09	.22	.25	.50
10	2.53	1.31	.97	.75	.43	.25	.14	.18	.09	.22	.26	.43
11	1.47	1.33	.90	.72	.42	.23	.12	.20	.14	.22	.26	.42
12	1.15	1.18	.87	.72	.57	.26	.47	.16	.11	.22	.25	1.26
13	1.01	1.15	.84	.84	.69	.29	.23	.13	.17	.22	.25	.88
14	.90	1.13	.97	1.26	.56	.26	.17	.12	.13	.22	.25	.70
15	.81	1.80	1.95	.98	.44	.23	.14	.12	.10	.22	.25	.58
16	.74	5.68	1.31	.88	.45	.20	.13	.16	.10	.27	.25	.55
17	.71	2.83	1.16	.86	.58	.19	.14	.17	.10	.29	.25	.57
18	.73	8.19	1.03	.79	.48	.22	.20	.14	.11	.23	.25	.50
19	.76	5.77	.97	.80	.43	.23	.21	.14	.25	.22	.43	.43
20	6.18	2.46	1.04	.88	.39	.21	.19	.11	.33	.22	.39	.72
21	2.88	1.84	1.22	.84	.39	.26	.52	.10	.22	.22	.28	.64
22	1.82	1.60	1.02	.78	.36	.26	3.86	.10	.15	.22	.28	.58
23	1.43	1.38	.96	.73	.35	.22	.53	.09	.13	.22	.28	.55
24	2.91	1.25	.96	.67	.34	.18	.31	.08	.11	.22	.28	.52
25	12.86	1.16	.92	.63	.32	.18	.26	.08	.11	.22	4.47	.49
26	2.67	1.07	.93	.61	.29	.17	.24	.07	.12	.22	1.08	1.12
27	1.72	.99	.82	.76	.29	.15	.22	.06	.12	.22	.69	5.14
28	1.37	1.01	.82	.85	.53	.13	.20	.08	.15	.22	.55	2.65
29	1.15	1.15	.81	.67	.58	.13	.41	.11	.29	.22	.47	1.51
30	1.09	-----	.78	.69	.39	.13	.34	.33	.29	.22	.43	1.13
31	1.25	-----	.74	-----	.34	-----	.23	.66	-----	.23	-----	.93
MEAN	2.42	2.19	1.02	.81	.48	.25	.34	.16	.14	.27	.47	.88
INCHES	1.68	1.43	.71	.55	.33	.17	.23	.11	.10	.19	.32	.66

NOTES: TO CONVERT CFS TO IN/DAY, MULTIPLY BY 0.022497.

1964		SELECTED RUNOFF EVENT				BLACKSBURG, VIRGINIA		CHESTNUT BRANCH W-1		13.15	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of July 22 and 23, 1964											
					RG	R-2					
7-22	RG R-1 1/.02	2/.0023	7-22	0540	.00	.00	7-22	0642	.5839	.0000	
				0620	.03	.02		0654	.4586	.0001	
7-22	RG R-2 3/.06			0659	.05	.05		0657	.5012	.0001	
				0707	.38	.10		0704	.5012	.0001	
				0718	1.20	.32		0712	.5012	.0002	
7-22	RG R-3 4/.01			0725	.60	.39		0724	.5545	.0003	
				0729	.50	.45		0752	.5865	.0006	
				0732	.40	.47		0758	.7891	.0006	
				0740	.30	.51		0804	1.1091	.0007	
				0757	.21	.57		0806	1.1517	.0008	
				0807	.36	.63		0809	1.2370	.0008	
				0811	.75	.68		0821	1.3117	.0011	
				0823	.30	.74		0824	1.7383	.0011	
				0829	1.30	.87		0829	1.8769	.0013	
				0832	.60	.90		0832	1.8342	.0014	
				0838	1.30	1.03		0834	1.6743	.0014	
				0840	2.70	1.12		0838	1.6529	.0015	
				0845	1.32	1.23		0844	1.6036	.0017	
				0851	1.60	1.39		0852	1.5783	.0019	
				0857	.80	1.47		0856	1.6743	.0020	
				0903	.50	1.52		0859	1.9729	.0020	
				0910	.17	1.54		0905	2.6874	.0023	
				0925	.00	1.54		0911	3.4445	.0025	
				0940	.04	1.55		0915	4.1804	.0028	
				1028	.00	1.55		0917	4.5963	.0029	
				1030	.30	1.56		0924	4.9269	.0034	
				1050	.00	1.56		0927	5.0442	.0037	
				1055	.12	1.57		0932	4.7349	.0041	
				1136	.00	1.57		0954	3.4125	.0055	
				1140	.30	1.58		1009	2.8260	.0062	
Watershed conditions: Woods, predominately hardwoods, some conifers, good cover, 37%; pasture, mostly native grasses, short, fair cover, 22%; hay, mostly alfalfa and orchardgrass, good cover, 22%; corn, 5 to 7 ft. tall, fair cover, 5%, small grain stubble with some weeds, fair cover, 5%; idle, good cover of weeds and grass 2 to 4 ft. tall, 7%; tobacco, 3 to 4 ft. tall, fair cover, 1%; roads, mostly paved, 1%.											

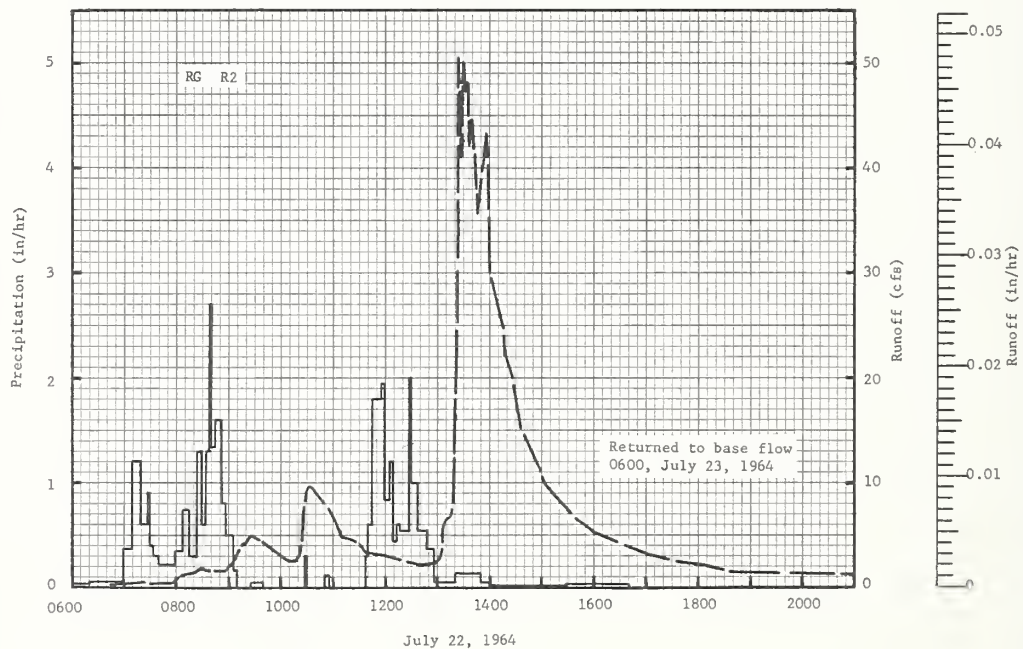
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0009374. FOR 30-DAY ANTECEDENT P AND Q, SEE DAILY TABLES ON THIS AND PREVIOUS PAGE. 1/ FROM 0300 TO 0400. 2/ CONTINUOUS FLOW PRIOR TO 0642. 3/ FROM 0232 TO 0410. 4/ FROM 0240 TO 0350.

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				CHESTNUT BRANCH W-I				13.15
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of July 22 and 23, 1964 - Continued											
				RG	R-2						
			7-22	1145	.60	1.63	7-22	1011	2.7407	.0063	
				1155	1.80	1.93		1020	2.8686	.0067	
				1159	1.95	2.06		1022	3.6586	.0068	
				1204	.84	2.13		1024	6.0466	.0069	
				1208	1.20	2.21		1025	6.9850	.0070	
				1212	.45	2.24		1027	7.8702	.0072	
				1215	.60	2.27		1029	9.2139	.0075	
				1227	.55	2.38		1032	9.7471	.0080	
				1230	2.00	2.46		1036	9.4485	.0086	
				1236	1.00	2.56		1043	8.8513	.0096	
				1247	.55	2.68		1050	8.0408	.0105	
				1255	.38	2.73		1100	6.7504	.0117	
				1320	.07	2.76		1109	5.7400	.0125	
				1330	.12	2.78		1130	4.3630	.0142	
				1350	.12	2.82		1145	3.5832	.0152	
				1400	.06	2.83		1156	3.1139	.0157	
				1527	.01	2.84		1215	2.6341	.0166	
				1640	.02	2.86		1232	2.2715	.0172	
								1240	2.1755	.0175	
								1246	2.1968	.0177	
			7-22	RG	R-3						
				0535	.00	.00		1256	2.3674	.0181	
				0540	.12	.01		1259	2.5381	.0182	
				0547	.34	.05		1301	2.7514	.0183	
				0550	.40	.07		1303	3.6578	.0184	
				0600	.12	.09		1305	5.6200	.0185	
				0640	.03	.11		1307	6.0253	.0187	
				0645	.46	.15		1309	6.3773	.0189	
				0700	.20	.20		1315	6.8571	.0195	
				0710	.06	.21		1317	7.4649	.0197	
				0726	.00	.21		1318	9.3632	.0199	
				0728	.60	.23		1319	12.6051	.0200	
				0740	.05	.24		1320	16.6895	.0203	
				0745	.12	.25		1321	27.8122	.0206	
				0750	.00	.25		1322	50.3989	.0212	
				0755	.72	.31		1324	41.0998	.0226	
				0759	.90	.37		1327	47.9995	.0247	
				0805	.30	.40		1328	50.1337	.0255	
				0825	.66	.62		1331	47.3490	.0278	
				0850	.05	.64		1333	48.0422	.0293	
				1030	.01	.65		1334	45.3868	.0300	
				1150	.00	.65		1335	42.0809	.0307	
				1216	.09	.68		1338	44.7896	.0327	
				1220	.06	.69		1342	41.1851	.0354	
				1228	.15	.71		1345	35.6824	.0374	
				1234	.70	.78		1355	43.4592	.0436	
				1244	.90	.93		1358	33.3576	.0452	
				1255	.60	1.04		1400	30.2330	.0462	
				1305	.36	1.10		1404	28.6440	.0481	
								1408	27.0657	.0496	
				RG	R-1	1.52		1412	24.6902	.0514	
				3 RG	AVG 1/	1.98					
								1417	22.3095	.0533	
								1424	19.8354	.0556	
								1428	18.6877	.0568	
								1434	16.9402	.0584	
								1440	14.6419	.0599	
								1447	13.1596	.0614	
								1451	12.3918	.0622	
								1459	11.1547	.0637	
								1506	9.9284	.0646	
								1515	8.8299	.0661	
								1529	7.3050	.0679	
								1542	6.2878	.0693	
								1555	5.5667	.0705	
								1604	5.1614	.0713	
								1620	4.4150	.0725	

NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0009374. 1/ THIESSEN WEIGHTED FOR RG R-1, R-2 AND R-3.

1964 SELECTED RUNOFF EVENT			BLACKSBURG, VIRGINIA				CHESTNUT BRANCH W-I		13.15	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of July 22 and 23, 1964 - Continued										
							7-22	1648	3.4552	.0742
								1708	3.0073	.0752
								1728	2.6447	.0761
								1804	2.1648	.0774
								1828	1.9196	.0782
								1844	1.8342	.0787
								1928	1.5783	.0798
								2036	1.2370	.0813
								2100	1.1517	.0818
								2128	1.0664	.0823
								2148	1.0664	.0826
								2208	1.0024	.0829
								2328	.8958	.0841
								2400	.8958	.0845
							7-23	0052	.8318	.0852
								0104	.8318	.0854
								0140	.7785	.0859
								0340	.7252	.0873
								0600	1/.6612	.0886

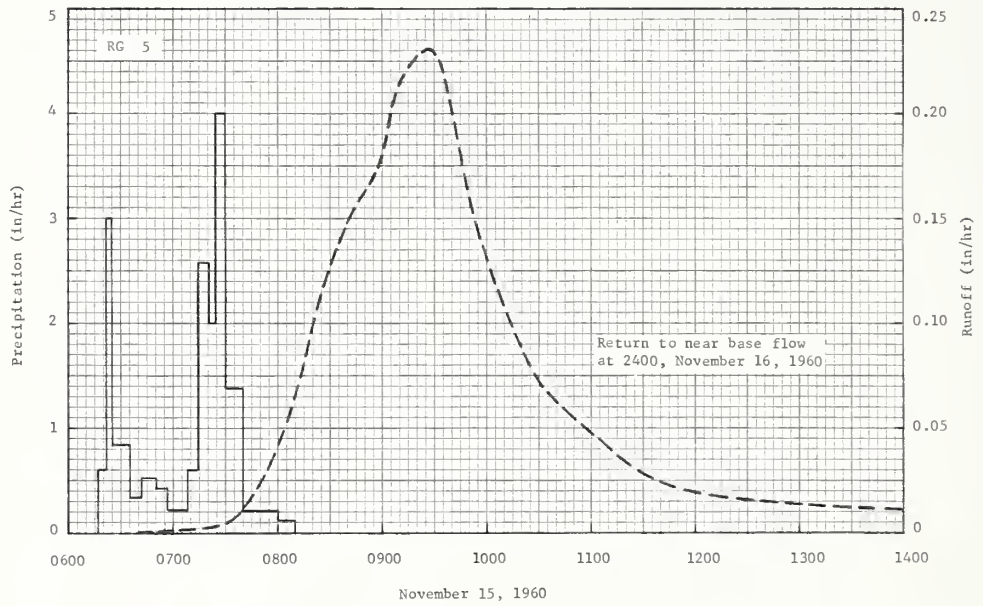
NOTES: TO CONVERT CFS TO IN/HR, MULTIPLY BY 0.0009374. 1/ NORMAL BASE FLOW.



BLACKSBURG, VIRGINIA CHESTNUT BRANCH W-I

MONTHLY PRECIPITATION AND RUNOFF (inches)							IOWA CITY, IOWA RALSTON CREEK AREA — 1930 ACRES (3.01 SQ. MILES)									
YEAR	MDNTN	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/ Q 2/	.33 .02	.74 .07	1.81 .24	4.40 .57	2.14 .47	5.67 .62	3.04 .11	2.96 .04	2.48 .02	.05 .00	1.75 .04	1.14 .02	26.51 2.22		
STA AV P (25-64)Q2/		1.09 .43	1.07 .92	1.98 1.27	2.82 .70	3.53 .65	4.53 .75	3.96 .52	3.38 .31	3.41 .29	2.51 .28	2.10 .38	1.21 .25	31.59 6.75		
MEAN P 3/ 114 YR		1.49	1.39	2.28	2.87	4.00	4.50	3.89	3.54	3.82	2.53	2.04	1.52	33.87		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-22	.03	6-22	.03	6-22	.05	6-22	.09	6-22	.13	6-22	.18	6-18	.21	6-18	.48
MAXIMUMS FOR PERIOD OF RECORD																
1925 TO 1964	7-18 1956	.86	7-18 1956	.65	7-14 1962	.93	7-14 1962	2.23	7-14 1962	2.52	7-13 1962	2.62	7-13 1962	2.72	3-18 1962	4.15
NOTES: Watershed conditions: Approximately 40% cultivated; 35% pasture; 20% brush, timber, and orchards; 5% urban development, roads and farmsteads. 1/ Precipitation, Thiessen weighted average of five recording rain gages. 2/ Runoff records furnished by U. S. Geological Survey. 3/ Mean P based on 114-yr (1851-1964) U.S. Weather Bureau record period at Dubuque, Iowa.																
1960 SELECTED RUNOFF EVENT							IOWA CITY, IOWA RALSTON CREEK									
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
5 RG 4/			Event of November 15, 1960													
10-16	.00	.0012	11-15	RG	5		11-15	0640	.0003	.0000						
10-17	.00	.0012		0617	.00	.00		0700	.0008	.0002						
10-18	.00	.0012		0622	.60	.05		0710	.0018	.0004						
10-19	.07	.0025		0625	3.00	.20		0730	.0043	.0015						
10-20	.00	.0025		0635	.84	.34		0739	.0114	.0026						
10-21	.00	.0025		0642	.34	.38		0757	.0361	.0098						
10-22	.00	.0025		0650	.53	.45		0806	.0573	.0168						
10-23	.00	.0025		0657	.43	.50		0814	.0774	.0258						
10-24	.00	.0025		0708	.22	.54		0819	.0958	.0330						
10-25	.53	.0049		0714	.60	.60		0824	.114	.0417						
10-26	.00	.0025		0721	2.57	.90		0830	.127	.0538						
10-27	.00	.0025		0724	2.00	1.00		0842	.152	.0817						
10-28	.02	.0025		0730	4.00	1.40		0900	.180	.1316						
10-29	.46	.0025		0740	1.38	1.63		0910	.214	.1645						
10-30	1.02	.0210		0800	.21	1.70		0928	.231	.2312						
10-31	2.29	.5179	11-15	0810	.12	1.72		0940	.203	.2746						
11-1	.00	.0715						0945	.180	.2906						
11-2	.00	.0247						0952	.152	.3100						
11-3	.00	.0160						1014	.101	.3565						
11-4	.04	.0136						1030	.0721	.3795						
11-5	.00	.0111		RG	1			1100	.0484	.4097						
11-6	.00	.0099		0612	.00	.00		1130	.0283	.4289						
11-7	.01	.0099		0622	1.80	.30		1200	.0193	.4408						
11-8	.22	.0123		0650	.32	.45		1300	.0137	.4573						
11-9	.00	.0086		0700	.06	.46		1400	.0108	.4697						
11-10	.00	.0074		0707	.77	.55		1500	.0090	.4796						
11-11	.00	.0086		0715	2.63	.90		1600	.0080	.4881						
11-12	.00	.0086		0722	3.86	1.35		1800	.0071	.5033						
11-13	.00	.0074		0727	1.20	1.45		2100	.0060	.5231						
11-14	.00	.0074		0733	2.50	1.70		2400	.0052	.5400						
11-15	.00	.0020		0750	.32	1.79	11-16	0300	.0043	.5543						
				0810	.03	1.80		0700	.0038	.5705						
									1200	.0029	.5875					
									2400	.0010	.5995					
Watershed conditions: All crops dormant; soil not frozen; no snow present. Approximate land use: 45% cultivated; 35% pasture; and 20% timber.				RG	2	1.70										
				RG	3	1.97										
				RG	4	1.89										
				5 RG	AVG 4/	1.84										
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1946.08. FOR CONTOUR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, P. 21.1-4. 4/ THIESSEN AVERAGE OF FIVE RECORDING RAIN GAGES. 5/ RUNOFF PRIOR TO 0640. 6/ RETURN TO NEAR BASE FLOW.																

Cooperative Research Project of USDA, U.S. Geological Survey, and University of Iowa



IOWA CITY, IOWA RALSTON CREEK

MONTHLY PRECIPITATION AND RUNOFF (inches)						McCREIDIE, MISSOURI STATION RESERVOIR WATERSHED W-1 AREA — 154 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.70 .03	1.31 .00	3.10 .09	5.44 .56	4.56 .23	4.63 .11	2.21 .03	.92 .00	2.77 .00	.10 .00	4.00 .07	1.75 .00	31.49 1.12			
STA AV P (41-64) Q	1.36 .48	1.65 .71	2.83 1.26	3.53 1.10	4.12 .84	4.37 .81	3.54 .46	2.93 .08	3.49 .41	3.44 .87	2.00 .40	1.55 .34	34.81 7.76			
MEAN P 2/ 75 YR	1.83	1.80	2.92	3.70	4.72	4.60	3.52	3.71	4.28	2.86	2.19	1.79	37.92			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		5 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-5	.06	4-5	.06	4-5	.10	4-5	.21	4-5	.26	4-5	.28	4-5	.28	4-5	.28
MAXIMUMS FOR PERIOD OF RECORD																
19 41 TO 19 64	10-4 1941	2.02	10-4 1941	1.20	10-4 1941	1.96	10-4 1941	3.94	10-4 1941	6.97	10-4 1941	7.74	10-3 1941	8.06	10-2 1941	8.80
Notes: Watershed conditions: 43% pasture and meadow; 22% alfalfa; 15% row crops of corn and soybeans; 14% small grains of wheat and milo; 6% roads and farmstead. 1/ Precipitation, Thiessen average of four recording gages and one non-recording rain gage. 2/ Mean P based on 75-yr (1890-1964) U.S. Weather Bureau record period at Columbia, Mo.																
NO SIGNIFICANT RUNOFF EVENT FOR PRESENTATION OCCURRED IN 1964. FOR REVISED TOPOGRAPHIC MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, PAGE 25.1-8.																

Cooperative Research Project of USDA and the Missouri Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO		WATERSHED 102					26.01			
						AREA— 1.26 ACRES										
MONTH YEAR		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P1/	2.53	2.05	7.79	5.69	3.97	3.74	2.73	4.04	.58	.87	2.03	4.66	40.68		
	Q	.00	.00	.12	.00	.01	.00	.00	.01	.00	.00	.00	.00	.14		
STA AV	2/P	1.55	2.36	4.44	3.39	4.05	5.35	3.90	3.35	2.04	2.40	2.20	2.24	37.27		
(37-64)	Q	.03	.03	.18	.06	.01	.22	.04	.04	.02	.01	T	0	.64		
MEAN	P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-2	.06	3-10	.02	3-10	.04	3-10	.06	3-10	.08	3-10	.12	3-9	.12	3-9	.12

MAXIMUMS FOR PERIOD OF RECORD

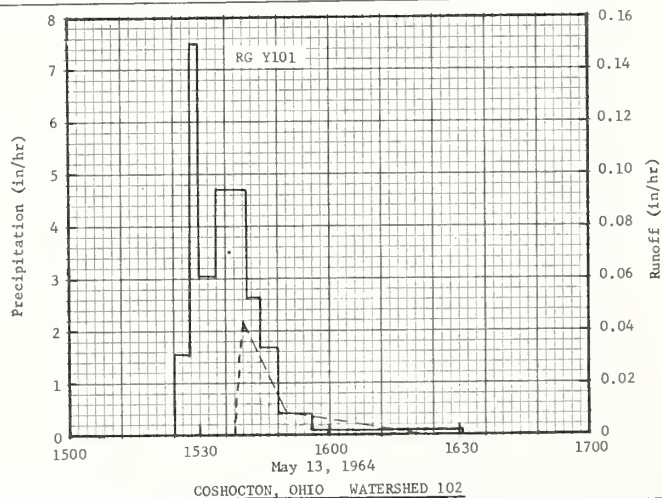
19 37 TO	6-12	3.64	6-12	1.31	6-12	1.32	6-12	1.32	6-12	1.32	6-12	1.33	3-4	1.50	3-1	1.69
1964 4/	1957		1957		1957		1957		1957		1957		1963		1963	

NOTES: Watershed conditions: Improved permanent pasture. 1/ Rain gage Y101. 2/ Precipitation and runoff records began Apr. 1937. Watershed discontinued Jan. 1, 1947, to Apr. 30, 1957, and Sept. 1, 1957, to Mar. 29, 1960. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ No maximums taken for 1947 through 1956 or 1958 and 1959.

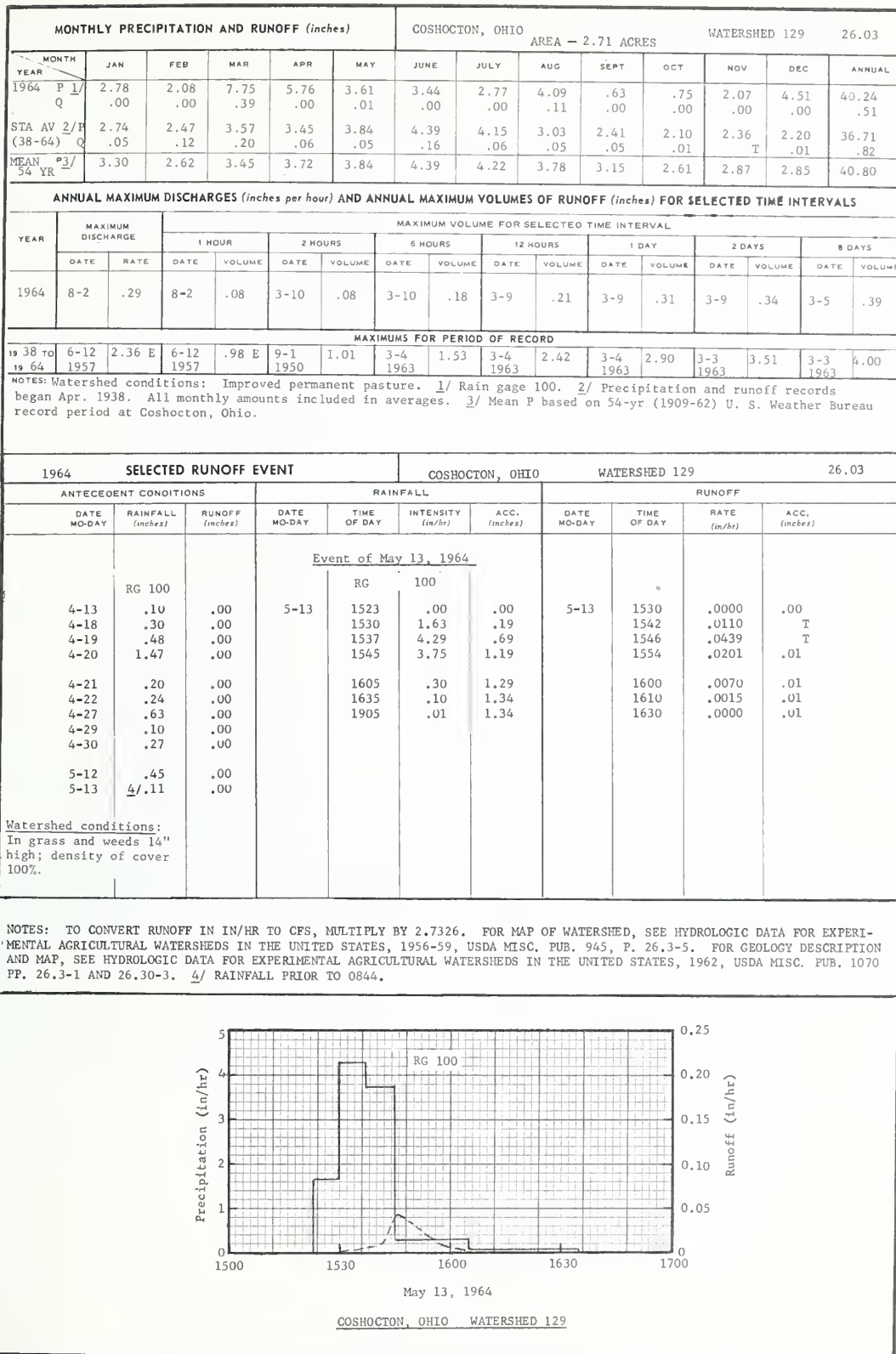
1964			SELECTED RUNOFF EVENT				COSHOCOTON, OHIO		WATERSHED 102		26.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of May 13, 1964												
	RC Y101		5-13	RC	Y101		5-13					
4-13	.11	.00		1524	.00	.00		1538	.0000	.00		
4-18	.30	.00		1528	1.50	.10		1540	.0433	T		
4-19	.48	.00		1530	7.50	.35		1550	.0079	T		
4-20	1.46	.00		1534	3.00	.55		1620	.0000	.01		
4-21	.20E	.00		1541	4.71	1.10						
4-22	.28	.00		1544	2.60	1.23						
4-27	.53	.00		1548	1.65	1.34						
4-29	.12	.00		1556	.38	1.39						
4-30	.25	.00		1611	.08	1.41						
5-12	.43	.00		1631	.12	1.45						
5-13	.5/.14	.00		1931	.01	1.47						
Watershed conditions: Cover consists of legumes (alfalfa seeded Apr. 16, 1964), grass and weeds 3" high; density of cover 45%.												

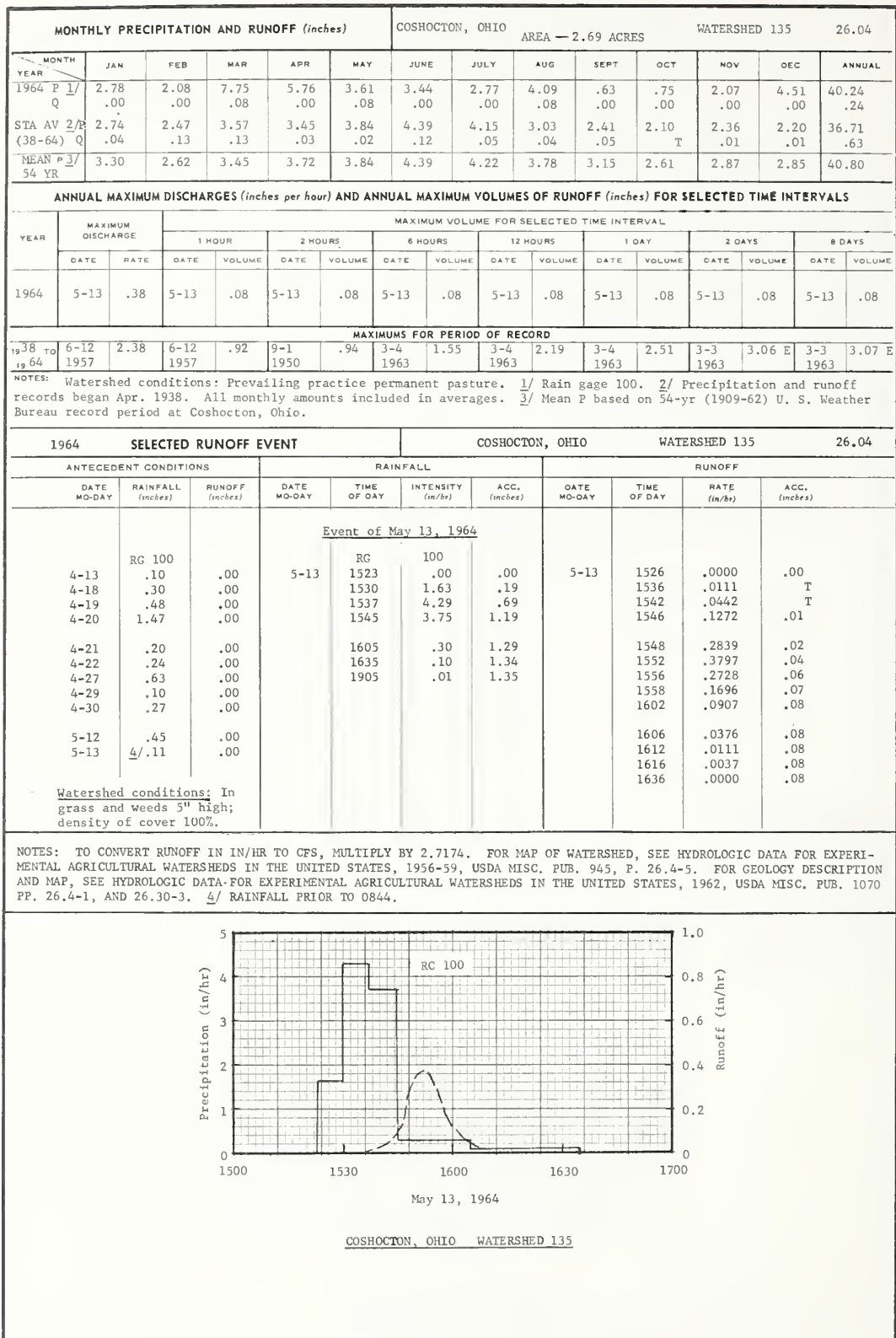
Watershed conditions: Cover consists of legumes (alfalfa seeded Apr. 16, 1964), grass and weeds 3" high; density of cover 45%.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.2705. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.1-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.1-1 AND 26.30-3. 5/ RAINFALL PRIOR TO 0930.



Cooperative Research Project of USDA and Ohio Agricultural Experiment Station





MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		AREA — 1.63 ACRES		WATERSHED 130		26.05		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964	P 1/	2.74	2.01	7.44	5.68	3.47	3.34	2.87	3.70	.61	.76	1.92	4.07	38.61
	Q	.00	.00	.66	.05	.01	.00	.00	.00	.00	.00	.00	.00	.72
STA AV 2/P (38-64)	2/P	2.69	2.38	3.43	3.34	3.79	4.31	4.24	2.91	2.45	2.10	2.35	2.16	36.15
	Q	.11	.15	.22	.09	.03	.20	.06	.02	.06	T	T	.01	.95
MEAN 54 YR	P3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3.10	.12	3-10	.08	3-10	.13	3-9	.33	3-9	.42	3-9	.53	3-9	.56	3-4	.66

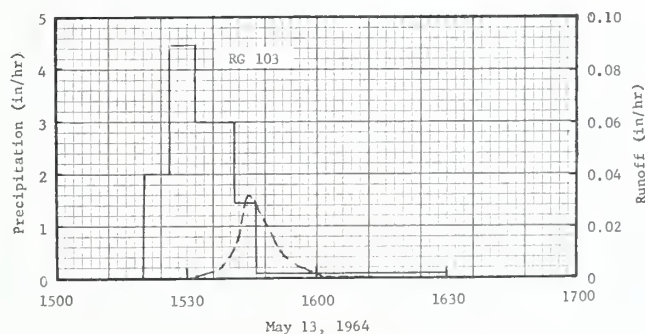
MAXIMUMS FOR PERIOD OF RECORD

1938 TO	6-12	4.06	6-12	1.42	6-12	1.44	3-4	1.55	3-4	2.16	3-4	2.54	3-3	3.14 E	3-3	3.33 E
1964	1957		1957		1957		1963		1963		1963		1963		1963	

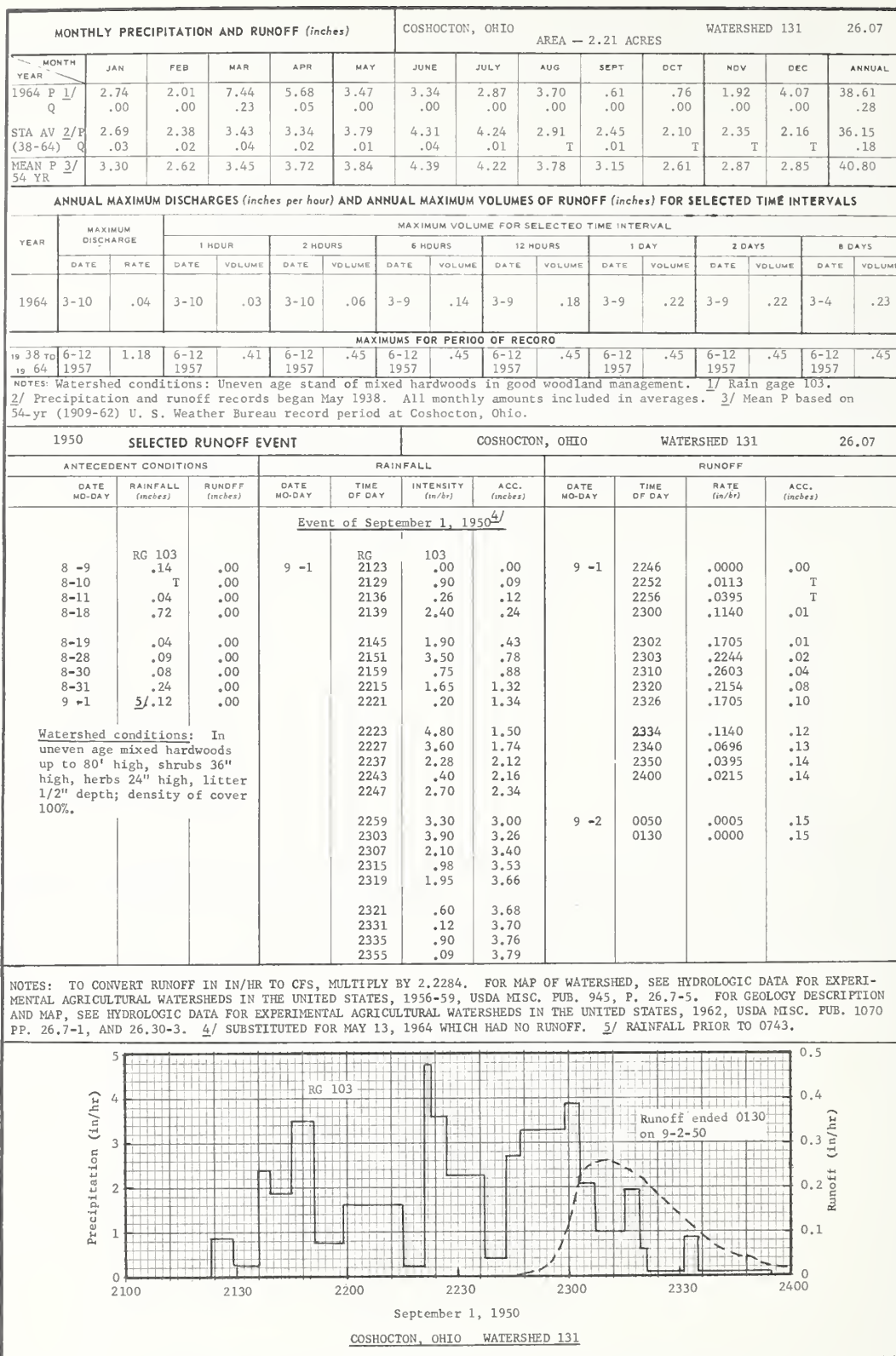
NOTES: Watershed conditions: Improved practice meadow. 1/ Rain gage 103. 2/ Precipitation and runoff records began May 1938. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.

1964 SELECTED RUNOFF EVENT			COSHOCOTON, OHIO				WATERSHED 130		26.05	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of May 13, 1964										
	RG 103			RG	103					
4-13	.12	.00	5-13	1520	.00	.00	5-13	1532	.0000	.00
4-18	.31	.00		1526	2.00	.20		1542	.0146	T
4-19	.44	.00		1532	4.50	.65		1544	.0322	T
4-20	1.50	.05		1541	3.00	1.10		1550	.0146	T
4-21	.18	.00		1546	1.44	1.22		1600	.0018	.01
4-22	.24	.00		1630	.11	1.30		1614	.0000	.01
4-27	.61	.00		1800	.01	1.31				
4-29	.14	.00		1930	.02	1.34				
4-30	.25	.00								
5-12	.42	.00								
5-13	4/.13	.00								
Watershed conditions: In improved practice meadow, legumes, grasses, and weeds 14" high; density of cover 100%.										

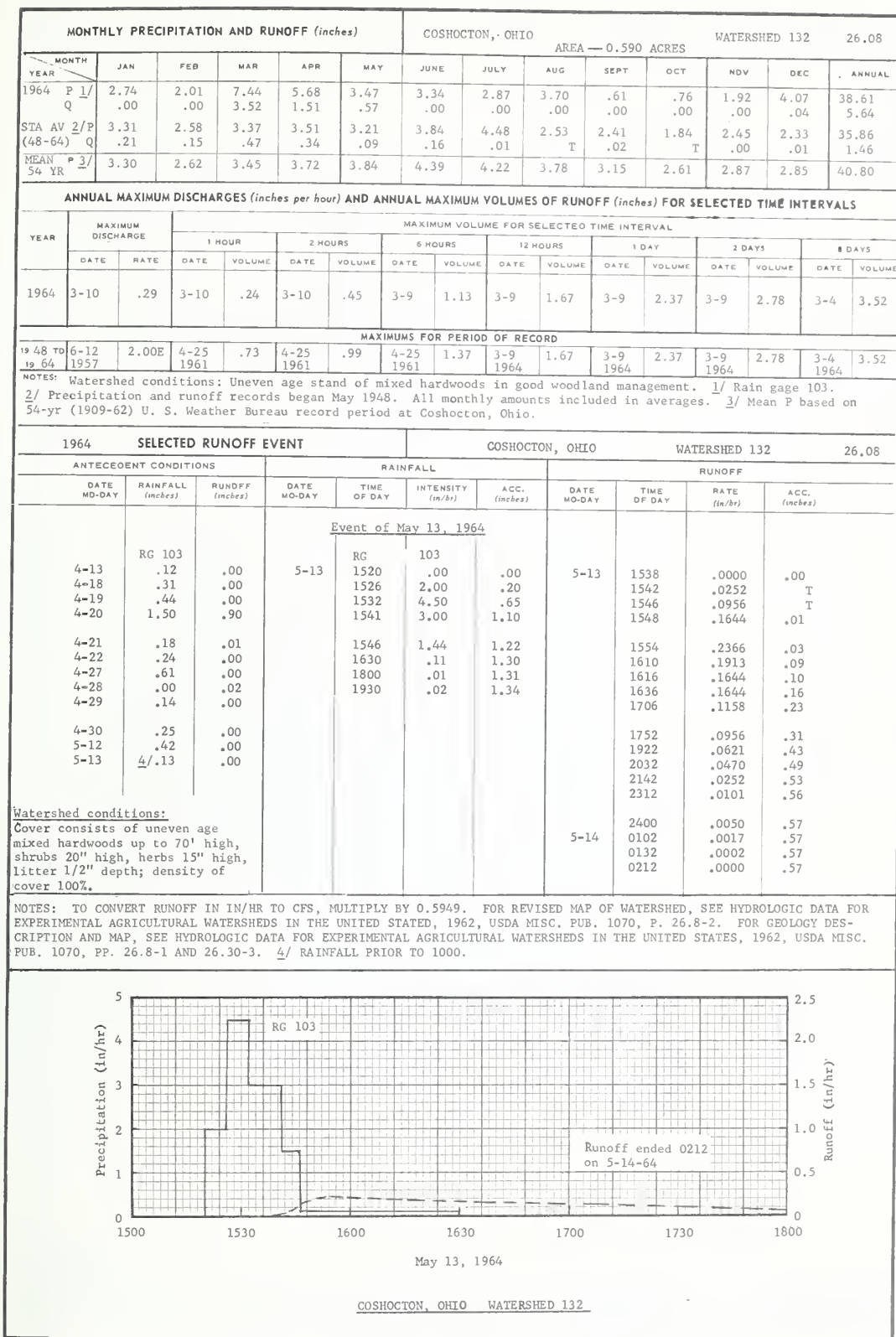
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6436. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.5-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.5-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1000.



COSHOCOTON, OHIO WATERSHED 130

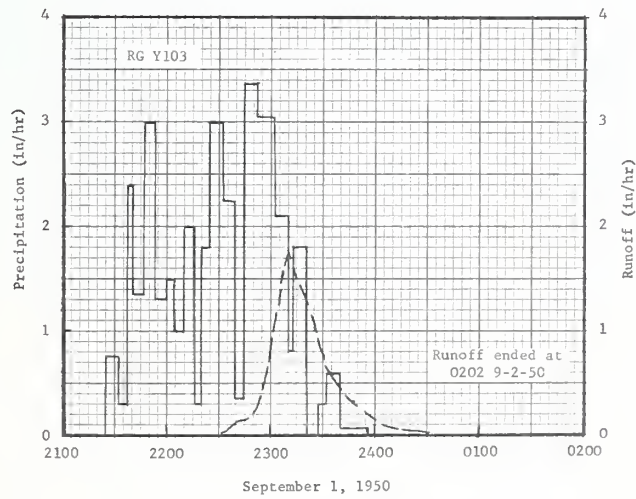


Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO				WATERSHED 123				26.10		
						AREA—1.37 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	3.18 .00	2.19 .00	8.02 2.66	6.14 .45	3.90 .00	3.67 .00	2.50 .00	4.25 T	.59 .00	.80 .00	2.11 .00	4.76 .00	42.11 3.11			
STA AV 2/P (39-64) Q	2.78 .38	2.50 .34	3.52 .48	3.57 .27	3.85 .14	4.60 .34	4.26 .14	3.01 .09	2.46 .06	2.23 .02	2.45 .01	2.33 .13	37.56 2.40			
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.24	3-10	.19	3-10	.33	3-9	.87	3-9	1.31	3-9	2.00	3-9	2.23	3-4	2.66
MAXIMUMS FOR PERIOD OF RECORD																
19 39 TO 19 64	6-12 1957	5.97	6-12 1957	1.37	6-12 1957	1.48	6-28 1957	1.51	1-21 1959	1.84	1-21 1959	2.33	1-21 1959	2.33	3-4 1964	2.66
NOTES: Watershed conditions: Second year meadow of a meadow, corn, wheat, meadow rotation; improved practice. 1/ Rain gage Y103. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1950 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO				WATERSHED 123				26.10		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 1, 1950 ^{4/}																
RG Y103																
8 -9	.23	.00	9 -1	RG	Y103	.00	9 -1	2232	.0000	.00						
8-10	T	.00		2125	.00	.00		2234	.0483	T						
8-11	.05	.00		2132	.77	.09		2238	.0999	.01						
8-18	.71	.00		2138	.30	.12		2240	.1513	.01						
				2140	2.40	.20										
8-19	.02	.00		2147	1.37	.36		2246	.1513	.03						
8-28	.04	.00		2153	3.00	.66		2250	.1918	.04						
8-30	.86	.00		2200	1.29	.81		2252	.2628	.04						
8-31	.28	.00		2204	1.50	.91		2254	.3771	.05						
9 -1	5/.11	.00		2210	1.00	1.01		2256	.5154	.07						
Watershed conditions: In																
legumes and grass 16" high;																
weeds 20" high; density of																
cover 100%.																
				2216	2.00	1.21		2258	.6776	.09						
				2220	.30	1.23		2300	.9193	.12						
				2224	1.80	1.35		2302	1.0858	.15						
				2232	3.00	1.75		2305	1.3971	.21						
				2239	2.23	2.01		2311	1.7518	.37						
				2244	.36	2.04		2318	1.3971	.55						
				2252	3.38	2.49		2322	1.2306	.64						
				2302	3.06	3.00		2326	1.0279	.72						
				2310	2.10	3.28		2330	.7673	.78						
				2313	.80	3.32		2332	.6349	.80						
				2321	1.80	3.56		2338	.4785	.85						
				2328	.00	3.56		2348	.3171	.92						
				2332	.30	3.58		2352	.2505	.94						
				2340	.60	3.66		2400	.1513	.97						
				2356	.08	3.68	9 -2	0012	.0654	.99						
				2400	.00	3.68		0032	.0216	1.00						
								0202	.0000	1.01						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.3814. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.10-6. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.10-1 AND 26.30-3. 4/ SUBSTITUTED FOR MAY 13, 1964, WHICH HAD NO RUNOFF. 5/ RAINFALL PRIOR TO 0426.																

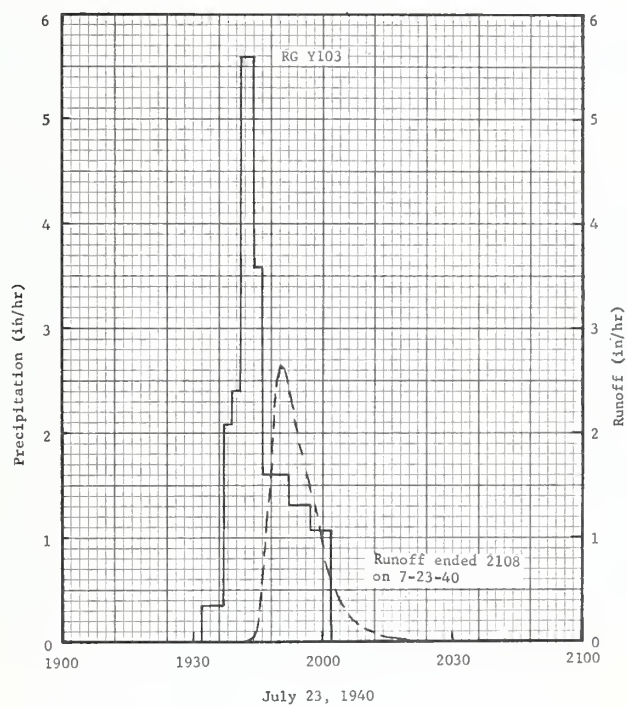
Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



COSHOCTON, OHIO WATERSHED 123

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO			AREA — 1.61 ACRES			WATERSHED 115		26.11	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/ Q	3.18 .00	2.19 .00	8.02 1.52	6.14 .11	3.90 T	3.67 .00	2.50 .00	4.25 .05	.59 .00	.80 .00	2.11 .00	4.76 .05	42.11 1.73		
STA AV 2/P (39-64)	Q	2.82 .22	2.43 .24	3.52 .24	3.57 .14	3.85 .16	4.60 .44	4.26 .33	3.01 .18	2.46 .14	2.23 .03	2.45 .02	2.33 .06	37.53 2.20		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.17	3-10	.13	3-10	.22	3-9	.56	3-9	.80	3-9	1.06	3-9	1.15	3-4	1.52
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-12 1957	4.12	9-1 1950	1.33	9-1 1950	1.56	9-1 1950	1.58	9-1 1950	1.59	9-1 1950	1.59	3-3 1963	1.66	6-29 1941	2.85
NOTES: Watershed conditions: Second year meadow of a meadow, corn, wheat, meadow rotation; prevailing practice. 1/ Rain gage Y103. 2/ Precipitation and runoff records began Apr. 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1940 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO				WATERSHED 115				26.11		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME DF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 23, 1940 ^{4/}																
6-23	RG Y103 .77	.23	7-23	RG 1932	Y103 .00	.00	7-23	1934	.0000	.00						
6-24	.15	.00		1937	.36	.03		1937	.0003	T						
6-25	.21	.01		1939	2.10	.10		1940	.0010	T						
6-26	.13	.01		1941	2.40	.18		1943	.0036	T						
6-28	1.79	1.14		1944	5.60	.46		1944	.0185	T						
6-30	.61	.12		1946	3.60	.58		1945	.1632	T						
7-1	.15	.05		1952	1.60	.74		1946	.6529	.01						
7-9	.01	.00		1957	1.32	.85		1947	1.1889	.02						
7-10	.01	.00		2002	1.08	.94		1948	1.9096	.05						
7-11	.47	T						1949	2.4763	.09						
7-12	T	.00						1950	2.6549	.13						
7-15	.13	.00						1951	2.6118	.18						
7-22	.87	.02						1952	2.4763	.22						
7-23	5/.56	6/.07						1953	2.2668	.26						
Watershed conditions: In legumes and grass 10" high, weeds 14" high; density of cover 100%.										1954	2.0636	.30				
										1957	1.4907	.39				
										2000	.9486	.45				
										2005	.3345	.50				
										2010	.1207	.52				
										2015	.0456	.53				
										2020	.0216	.53				
										2025	.0098	.53				
										2031	.0036	.53				
										2108	.0000	.53				
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6234. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.11-6. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.11-1, AND 26.30-3. 4/ SUBSTITUTES FOR MAY 13, 1964 WHICH HAD NO RUNOFF. 5/ RAINFALL PRIOR TO 1715. 6/ RUNOFF PRIOR TO 1800.																

Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



COSHOCTON, OHIO WATERSHED 115

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		AREA — 1.65 ACRES		WATERSHED 127		26.12		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964	P 1/	3.18	2.19	8.02	6.14	3.90	3.67	2.50	4.25	.59	.80	2.11	4.76	42.11
	Q	.00	.00	2.39	.56	T	.00	.00	.02	.00	.00	.00	.01	2.98
STA AV 2/P		3.32	2.70	3.48	3.82	3.33	4.33	4.48	2.85	2.39	1.89	2.53	2.47	37.29
	(49-64) Q	.88	.63	.66	.41	.08	.32	.13	.08	.09	T	.05	.31	3.64
MEAN P 3/		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80
54 YR														

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.27	3-10	.18	3-10	.32	3-9	.83	3-9	1.24	3-9	1.72	3-9	1.99	3-4	2.39

MAXIMUMS FOR PERIOD OF RECORD

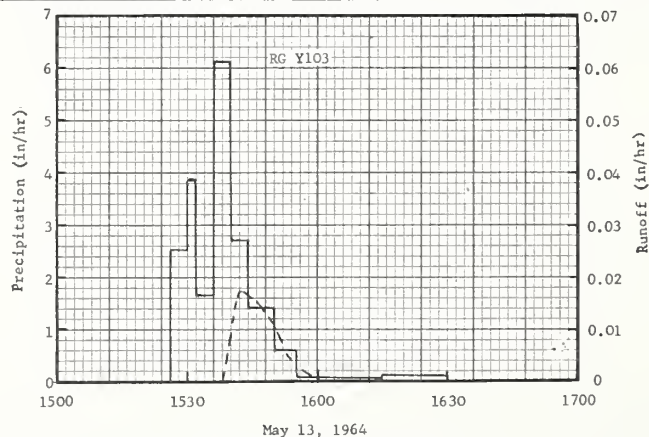
1949 TO	6-12	3.12	9-1	1.33	9-1	1.48	6-12	1.49	1-26	1.97	1-26	2.65	1-25	2.82	1-25	2.85
1964	1957		1950		1950		1957		1952		1952		1952		1952	

NOTES: Watershed conditions: Second year meadow of a meadow, corn, wheat, meadow rotation; improved practice.

1/ Rain gage Y103. 2/ Precipitation and runoff record began May 1949. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.

1964 SELECTED RUNOFF EVENT			COSHOTOON, OHIO				WATERSHED 127		26.12	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of May 13, 1964										
	RG Y103			RG	Y103					
4-13	.16	.00	5-13	1526	.00	.00	5-13	1538	.0000	.00
4-18	.35	.00		1530	2.55	.17		1540	.0084	T
4-19	.45	.00		1532	3.90	.30		1542	.0175	T
4-20	1.48	.40		1536	1.65	.41		1550	.0114	T
4-21	.20	.02		1540	6.15	.82		1600	.0006	T
4-22	.28	.00		1544	2.70	1.00		1610	.0000	.00
4-27	.68	.01		1550	1.40	1.14				
4-29	.13	.00		1555	.60	1.19				
4-30	.26	.00		1615	.06	1.21				
5-12	.48	.00		1630	.12	1.24				
5-13	<u>4</u> .10	.00		1800	.01	1.26				
				1930	.01	1.27				
Watershed conditions: In legumes and grass 18" high, weeds 20" high; density of cover 100%.										

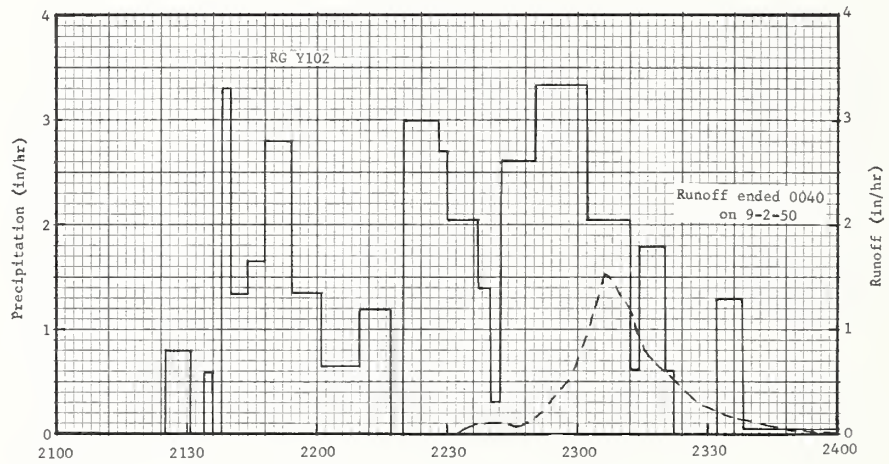
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6637. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.12-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 26.12-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 0840.



COSHOTOON, OHIO WATERSHED 127

Cooperative Research Project of USDA and Ohio Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO		AREA — 1.69 ACRES		WATERSHED 109		26.13			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/	2.57	1.93	8.17	6.02	4.12	3.97	2.63	4.12	.59	.82	1.96	4.51	41.41		
	Q	.00	.00	.18	T	.00	.00	.00	.00	.00	.00	.00	.00	.18		
STA AV 2/P		2.66	2.39	3.49	3.53	3.87	4.58	4.36	2.95	2.49	2.18	2.37	2.20	37.07		
	(38-64) Q	.08	.17	.16	.05	.12	.31	.24	.18	.06	.01	T	.02	1.40		
MEAN P 3/		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.04	3-10	.03	3-10	.05	3-9	.10	3-9	.13	3-9	.17	3-9	.18	3-9	.18
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	5-17 1961	4.34 E	6-29 1961	.82 E	6-28 1960	1.09	3-4 1963	1.35	3-4 1963	1.92	3-4 1963	2.17	3-3 1963	2.55	3-1 1963	2.66
NOTES: Watershed conditions: Second year meadow of a meadow, corn, wheat, meadow rotation; improved practice.																
1/ Rain gage Y102. 2/ Precipitation and runoff records began Nov. 1938. All monthly amounts included in averages.																
3/ Mean P based on a 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1950 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO		WATERSHED 109		26.13						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 1, 1950 ^{4/}																
8-9	RG Y102 .18	.00	9-1	RC Y102 2125	.00	.00	9-1	2232	.0000	.00						
8-10	T .00	.00		2131	.80	.08		2234	.0450	T						
8-11	.04	.00		2134	.00	.08		2236	.0915	T						
8-18	.70	.00		2136	.60	.10		2240	.1062	.01						
8-19	.02	.00		2138	.00	.10		2246	.0786	.02						
8-28	.05	.00		2140	3.30	.21		2250	.1379	.03						
8-30	.93	.00		2144	1.35	.30		2252	.2142	.03						
8-31	.26	.00		2148	1.65	.41		2254	.3363	.04						
9-1	5/.11	.00		2154	2.80	.69		2258	.5235	.07						
Watershed conditions: In legumes, grass and weeds 22" high; density of cover 100%.																
				2201	1.37	.85		2300	.7159	.09						
				2210	1.13	1.02		2302	.9448	.12						
				2217	1.71	1.22		2304	1.2089	.15						
				2220	.00	1.22		2306	1.5434	.20						
				2228	3.00	1.62		2312	1.2089	.34						
				2230	2.70	1.71		2316	.7570	.40						
				2237	2.06	1.95		2320	.5986	.45						
				2240	1.40	2.02		2326	.3644	.50						
				2242	.30	2.03		2332	.2142	.53						
				2250	2.62	2.38		2340	.1215	.55						
				2302	3.35	3.05		2346	.0663	.56						
				2312	2.04	3.39		2400	.0276	.57						
				2314	.60	3.41	9-2	0016	.0084	.57						
				2320	1.80	3.59		0040	.0000	.57						
				2322	.60	3.61										
				2332	.00	3.61										
				2338	1.30	3.74										
				2400	.05	3.76										
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.7041. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.13-4. FOR GEOLOGIC DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.13-1 AND 26.30-3. 4/ SUBSTITUTED FOR MAY 13, 1964, WHICH HAD NO RUNOFF. 5/ RAINFALL PRIOR TO 0445.																



September 1, 1950

COSHOCTON, OHIO WATERSHED 109

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO				WATERSHED 103				26.14		
						AREA -- 0.650 ACRES										
MONTH YEAR		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P1/ Q	2.75 .00	1.94 .00	7.31 2.99	5.74 .87	3.63 .01	3.52 .00	2.44 .00	3.79 .00	.59 .00	.80 .00	1.91 .00	4.36 .04	38.78 3.91		
STA AV	2/P	2.66	2.25	3.38	3.38	3.63	4.36	4.15	2.89	2.46	2.10	2.31	2.18	35.75		
(39-64)	Q	.35	.38	.66	.30	.16	.43	.29	.14	.15	.03	.03	.10	3.02		
MEAN	P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.30	3-10	.22	3-10	.40	3-9	1.08	3-9	1.67	3-9	2.29	3-9	2.54	3-4	2.97
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	7-23 1940	4.72	9-1 1950	1.95	9-1 1950	2.60	9-1 1950	2.62	3-4 1963	2.82	3-4 1963	3.07	3-3 1963	3.50	3-1 1963	4.15
NOTES: Watershed conditions: First year meadow of a meadow, meadow, corn, wheat rotation; improved practice.																
1/ Rain gage 107. 2/ Precipitation and runoff records began Apr. 1939. All monthly amounts included in averages.																
3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshockton, Ohio.																

NOTES: Watershed conditions: First year meadow of a meadow, meadow, corn, wheat rotation; improved practice.

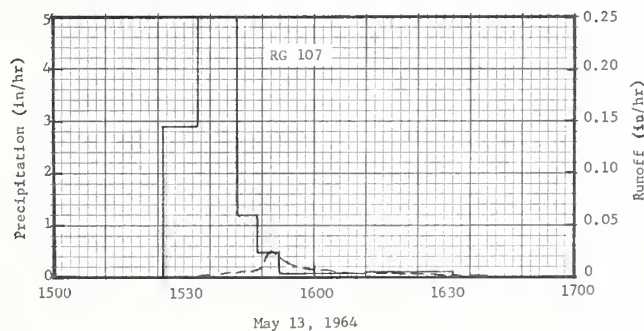
1/ Rain gage 107. 2/ Precipitation and runoff records began Apr. 1939. All monthly amounts included in averages.

3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.

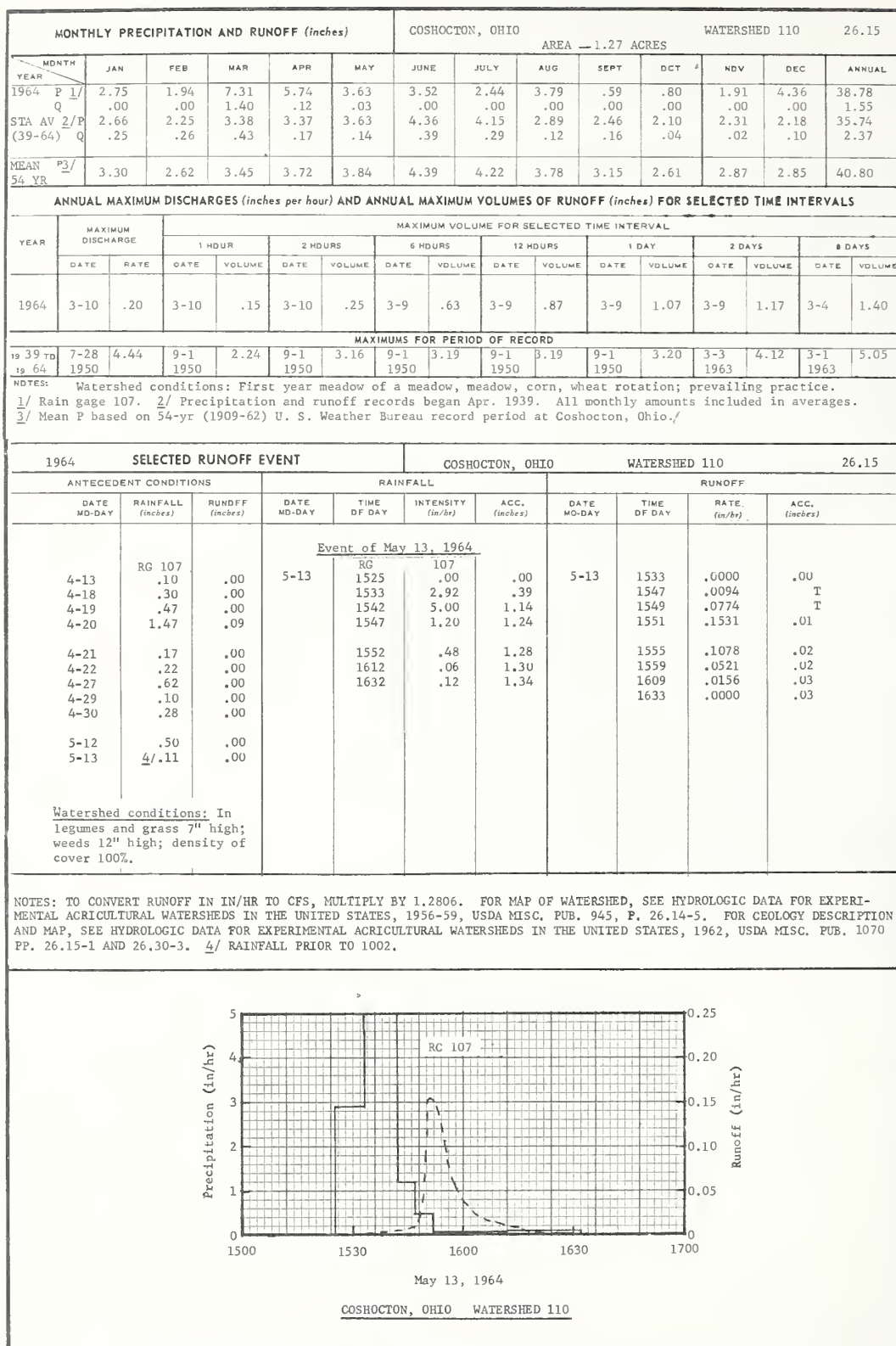
1964 SELECTED RUNOFF EVENT			COSHOCKTON, OHIO				WATERSHED 103				26.14
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
	RG 107		Event of May 13, 1964								
4-13	.10	.00	5-13	RG	107		5-13				
4-18	.30	.00		1525	.00	.00		1532	.0000	.00	
4-19	.47	.00		1533	2.92	.39		1546	.0076	T	
4-20	1.47	.45		1542	5.00	1.14		1550	.0253	T	
				1547	1.20	1.24		1600	.0076	T	
4-21	.17	.01		1552	.48	1.28		1610	.0021	.01	
4-22	.22	.00		1612	.06	1.30		1640	.0000	.01	
4-27	.62	.00		1632	.12	1.34					
4-29	.10	.00									
4-30	.28	.00									
5-12	.50	.00									
5-13	4/.11	.00									
Watershed conditions: in regumes, grass and weeds 17" high; density of cover 100%.											

Watershed conditions: in legumes, grass and weeds 17" high; density of cover 100%.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.65542. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.14-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.14-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1002.



COSHOCKTON, OHIO WATERSHED 103

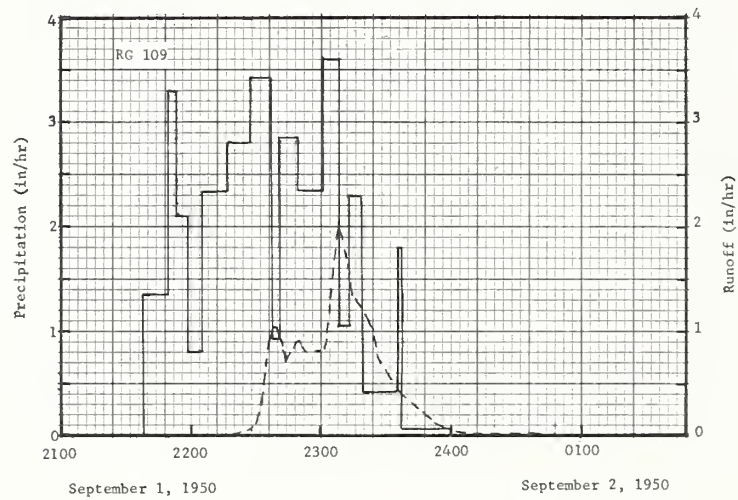


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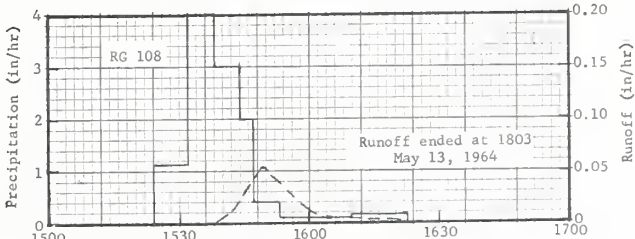
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		AREA — 1.45 ACRES		WATERSHED 113		26.16				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	2.72 .00	2.02 .00	7.86 1.71	5.79 .12	3.62 .00	3.67 .00	2.27 .00	4.12 .00	.66 .00	.87 .00	2.07 .00	4.65 .01	40.32 1.84			
STA AV 2/P (39-64) Q	2.71 .25	2.34 .41	3.43 .33	3.38 .17	3.88 .13	4.47 .39	4.03 .15	2.97 .19	2.54 .09	2.16 .04	2.38 .02	2.27 .06	36.56 2.23			
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.18	3-10	.15	3-10	.26	3-9	.66	3-12	.96	3-9	1.24	3-9	1.44	3-4	1.71
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-12 1957	3.77	9-1 1950	1.03	4-25 1961	1.20	6-28 1957	1.35	3-4 1963	1.50	2-4 1963	1.70	3-3 1963	2.00	3-1 1963	2.69
Note: Watershed conditions: The wheat year of a wheat, meadow, meadow, corn rotation; improved practice. 1/ Rain gage 109. 2/ Precipitation and runoff records began Sept. 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio.																
1950 SELECTED RUNOFF EVENT						COSHOCTON, OHIO		WATERSHED 113		26.16						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 1, 1950 ^{4/}																
8-9	RG 109 .18	.00	9-1	RG 2138	.00	.00	9-1	2218	.0000	.00						
8-10	T .00	.00		2149	1.36	.25		2222	.0204	T .01						
8-11	.06	.00		2153	3.30	.47		2228	.0678	.01						
8-18	.54	.00		2159	2.10	.68		2230	.1614	.01						
8-19	.03	.00		2205	.80	.76		2232	.2996	.02						
8-28	.04	.00		2217	2.35	1.23		2234	.5225	.03						
8-30	.49	.00		2227	2.82	1.70		2236	.8686	.05						
8-31	.23	.00		2237	3.42	2.27		2238	1.0259	.09						
9-1	5/.02	.00		2241	.90	2.33		2242	.8208	.15						
Watershed conditions: In wheat 9" high, grass and weeds 4" high; density of over 90%.																
				2249	2.85	2.71		2244	.7250	.17						
				2301	2.35	3.18		2250	.9165	.25						
				2309	3.60	3.66		2254	.8208	.31						
				2313	1.05	3.73		2256	.8413	.34						
				2319	2.30	3.96		2300	.8208	.40						
				2335	.41	4.07		2304	1.3200	.47						
				2337	1.80	4.13		2306	1.6552	.52						
				2400	.05	4.15		2308	1.9972	.58						
								2310	1.8809	.64						
								2312	1.6552	.70						
								2314	1.3200	.75						
								2322	1.1354	.92						
								2324	1.0259	.95						
								2326	.7729	.98						
								2332	.5608	1.05						
								2338	.3871	1.10						
								2342	.3276	1.12						
								2348	.2243	1.15						
								2352	.1614	1.16						
								2358	.0944	1.17						
								2400	.0562	1.18						
							9-2	0102	.0000	1.19						

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.4621. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.16-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.16-1 AND 26.30-3. 4/ SUBSTITUTED FOR MAY 13, 1964, WHICH HAD NO RUNOFF. 5/ RAINFALL PRIOR TO 0420.

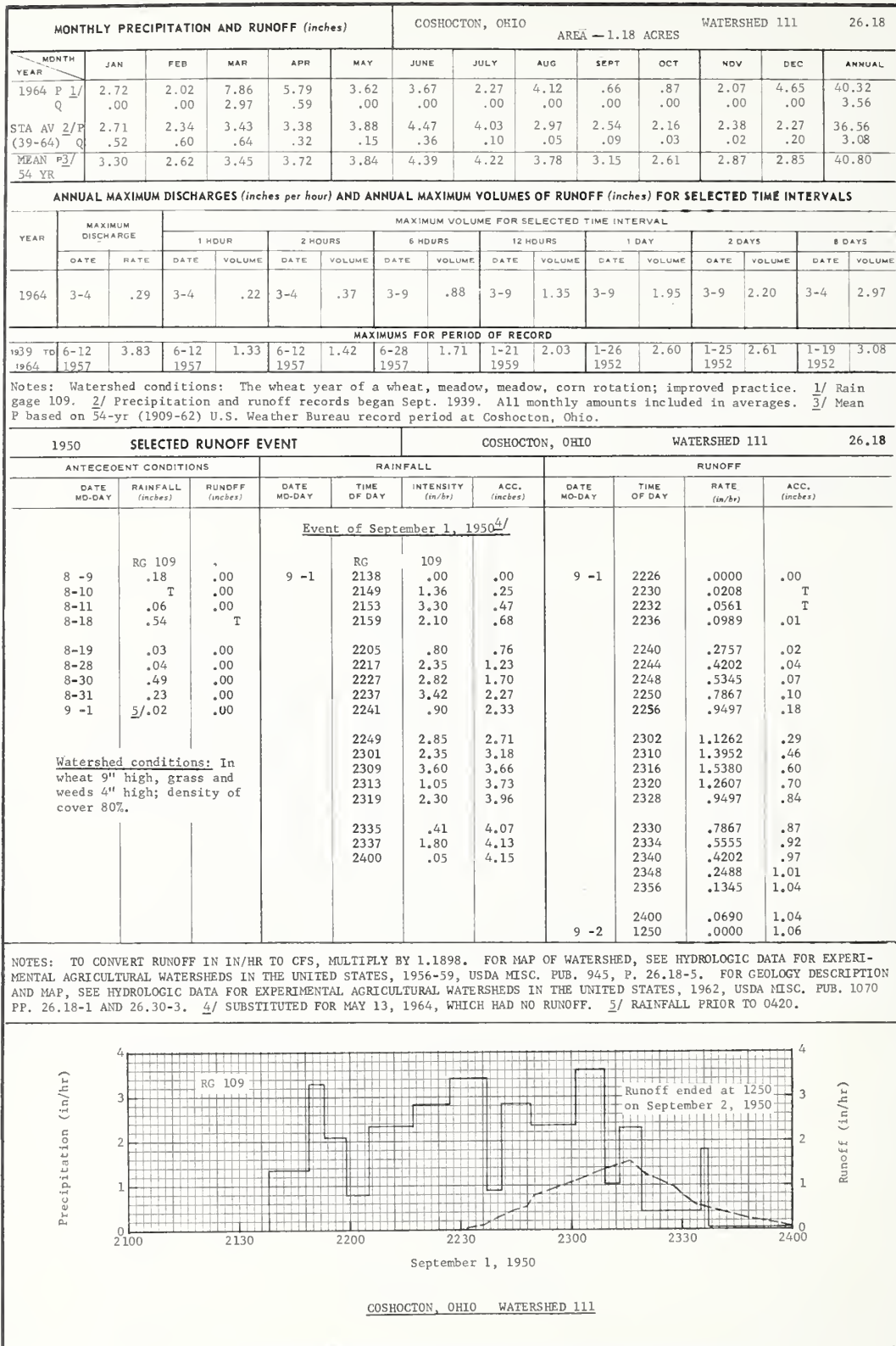
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.4621. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.16-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.16-1 AND 26.30-3. ^{4/} SUBSTITUTED FOR MAY 13, 1964, WHICH HAD NO RUNOFF. ^{5/} RAINFALL PRIOR TO 0420.



COSHOCTON, OHIO WATERSHED 113

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO					AREA — 1.96 ACRES		WATERSHEO 118		26.17	
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/	2.71	2.06	8.12	5.80	3.53	3.49	2.40	3.96	.68	.83	1.98	4.64	40.20			
Q	.00	.00	3.65	.35	.01	.00	.00	T	.00	.00	.00	.04	4.05			
STA AV 2/P	2.82	2.42	3.56	3.46	3.83	4.43	4.11	2.98	2.66	2.10	2.50	2.32	37.19			
(40-64) Q	.29	.33	.53	.23	.12	.43	.15	.26	.15	.01	.04	.09	2.63			
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.27	3-10	.20	3-10	.36	3-9	.90	3-9	1.33	3-9	1.90	3-9	2.41	3-4	3.43
MAXIMUMS FOR PERIOD OF RECORD																
1940 TO 1964	6-12	3.11	9-1	1.30	9-1	1.59	9-1	1.60	9-1	1.60	3-9	1.90	3-9	2.41	3-4	3.43
	1957		1950		1950		1950		1950		1964		1964		1964	
Notes: Watershed conditions: The wheat year of a wheat, meadow, meadow, corn rotation; prevailing practice. 1/ Rain gage 108. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO					WATERSHED 118		26.17			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 108				RG 108											
4-13	.12	.00	5-13	1524	.00	.00	5-13	1535	.0000	.00						
4-18	.30	.00		1532	1.12	.15		1539	.0035	T						
4-19	.48	.00		1538	4.00	.55		1543	.0177	T						
4-20	1.46	.15		1544	3.00	.85		1545	.0309	T						
4-21	.20	.03		1547	2.00	.95		1549	.0521	T						
4-22	.24	.05		1553	.40	.99		1553	.0390	.01						
4-23	.00	.01		1610	.07	1.01		1559	.0177	.01						
4-27	.68	.02		1623	.18	1.05		1603	.0051	.01						
4-29	.10	.00		1833	.01	1.06		1613	.0020	.01						
4-30	.28	T		1903	.02	1.07		1633	.0010	.01						
5-12	.51	.00						1703	.0005	.01						
5-13	4/.14	.00						1803	.0000	.01						
Watershed conditions: In wheat 12" high, grass and weeds 6" high; density of cover 90%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.9763. FOR MAP OF WATERSHEO, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USOA MISC. PUB. 945, P. 26.17-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USOA MISC. PUB. 1070 PP. 26.17-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 0843.																
																
COSHOCOTON, OHIO WATERSHEO 118																

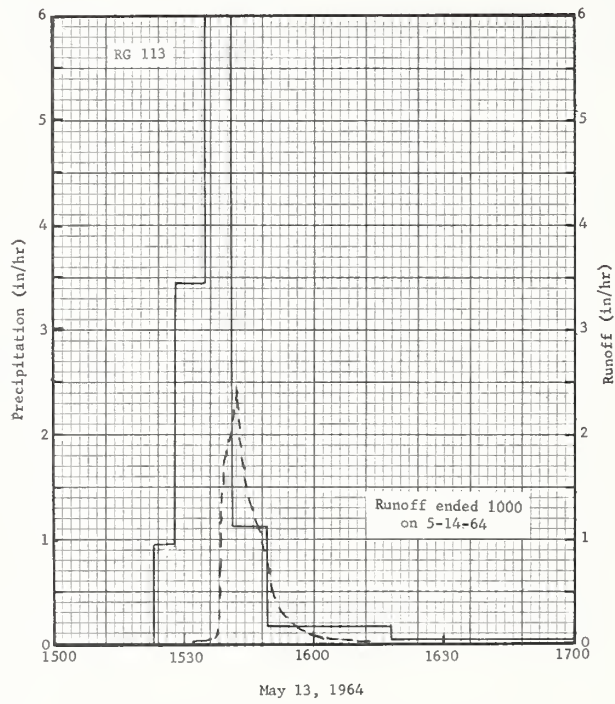
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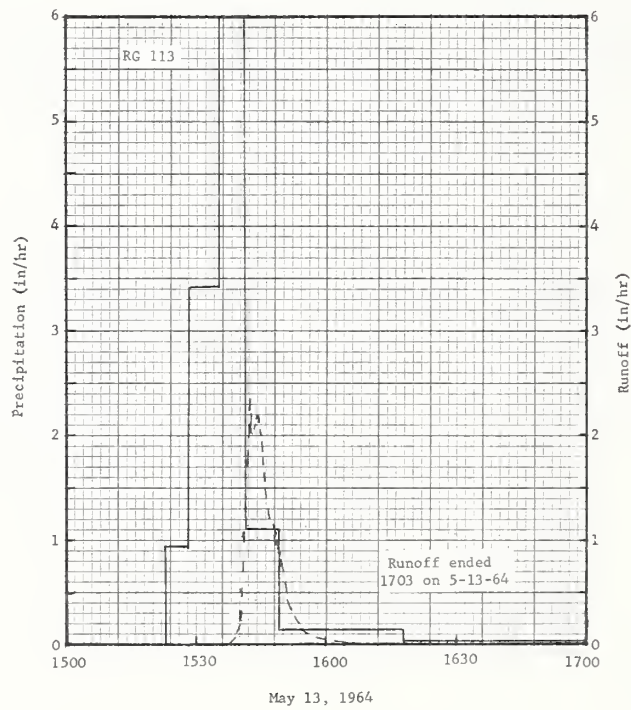
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCOTON, OHIO AREA— 1.42 ACRES WATERSHED 121							26.19	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1964	P 1/	2.66	1.90	7.33	5.96	3.57	3.35	2.63	3.77	.62	.86	1.78	4.44	38.87	
	Q	.00	.00	1.33	1.04	.40	.00	.00	.20	.00	.00	.00	.02	2.99	
STA AV 2/P	(39-64) P	2.69	2.23	3.30	3.29	3.69	4.44	4.35	2.90	2.52	2.10	2.29	2.16	35.96	
	Q	.20	.20	.34	.19	.06	.26	.21	.14	.09	.02	.01	.03	1.75	
MEAN P3/	54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS															
YEAR	MAXIMUM DISCHARGE	MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
		1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		5 DAYS	
		DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964		5-13	2.43	5-13	.37	5-13	.37	3-9	.52	3-9	.77	3-9	.97	3-4	1.14
MAXIMUMS FOR PERIOD OF RECORD															
1939 TO	8-23	7.82	9-1	1.32	9-1	1.39	9-1	1.39	9-1	1.39	9-1	1.39	3-3	1.66	3-1
1964	1944		1950		1950		1950		1950		1950		1963		1963
Notes: Watershed conditions: The corn year of a corn, wheat, meadow, meadow rotation; improved practice. 1/ Rain gage 113. 2/ Precipitation and runoff records began Apr. 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio.															
1964 SELECTED RUNOFF EVENT							COSHOCOTON, OHIO WATERSHED 121							26.19	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)					
Event of May 13, 1964															
	RG 113			RG	113										
4-13	.10	.01	5-13	1523	.00	.00	5-13	1528	.0000	.00					
4-18	.27E	.01		1528	.96	.08		1534	.0085	T					
4-19	.47E	.03		1535	3.43	.48		1536	.0284	T					
4-20	1.46E	.31		1541	6.00	1.08		1537	.0692	T					
4-21	.17E	.10		1549	1.12	1.23		1538	.6754	.01					
4-22	.27	.10		1618	.17	1.31		1539	1.7670	.03					
4-23	.00	.05		1703	.03	1.33		1541	2.0813	.09					
4-24	.00	.02		1833	.01	1.34		1542	2.4305	.13					
4-25	.00	.01						1543	2.0813	.17					
4-26	.00	.01						1544	1.6902	.20					
4-27	.64	.08						1546	1.2781	.25					
4-28	.00	.03						1548	1.0476	.29					
4-29	.15	.02						1550	.6970	.32					
4-30	.35	.04						1551	.4616	.33					
5-1	.00	T						1553	.3059	.34					
5-12	.42	.00						1558	.1201	.36					
5-13	.4/.10	.00						1603	.0573	.36					
								1610	.0208	.37					
								1618	.0085	.37					
Watershed conditions: Corn planted on May 4; area bare.															
								1633	.0043	.37					
								1718	.0013	.37					
								2400	.0013	.38					
								0309	.0013	.39					
								0311	.0027	.39					
								0348	.0013	.39					
								0448	.0027	.39					
								0822	.0003	.39					
								1000	.0000	.39					
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.4318. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.20-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.19-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 0838.															

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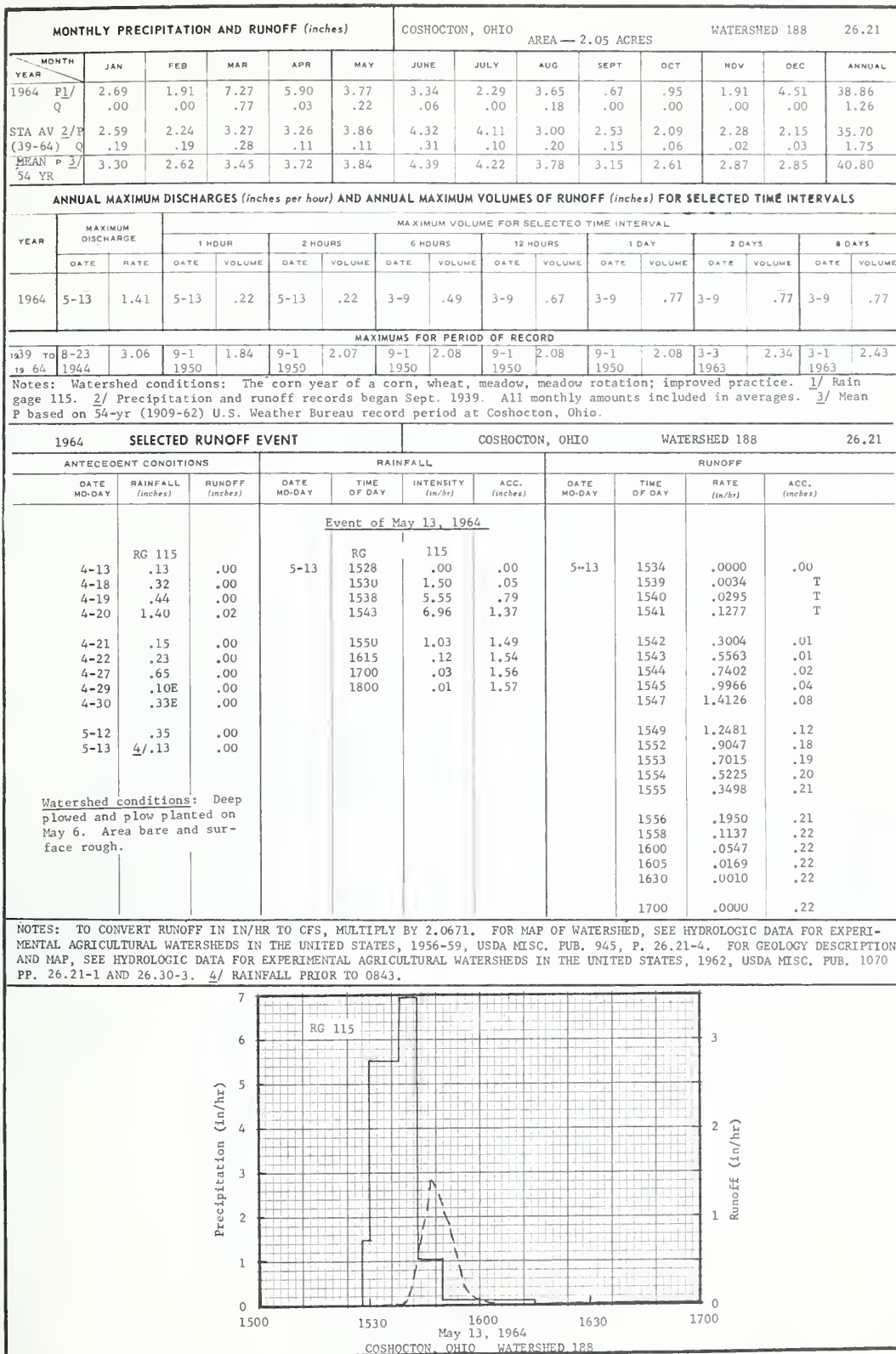


COSHOCTON, OHIO WATERSHED 121

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		AREA — 1.56 ACRES		WATERSHED 106		26.20				
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/	2.66	1.90	7.33	5.96	3.57	3.35	2.63	3.77	.62	.86	1.78	4.44	38.87			
Q	.00	.00	.81	.35	.31	.05	.09	.93	.00	.00	.00	.10	2.64			
STA AV 2/P	2.69	2.23	3.30	3.29	3.69	4.44	4.35	2.90	2.52	2.10	2.29	2.16	35.96			
(39-64) Q	.25	.27	.29	.14	.11	.34	.32	.25	.18	.02	.03	.09	2.29			
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-13	2.34	8-2	.46	8-2	.47	8-2	.47	8-2	.47	8-2	.47	3-9	.57	3-3	.76
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO	8-23	7.63	9-1	1.26	9-1	1.38	9-1	1.39	2-23	1.41	2-23	1.41	2-23	2.00	2-19	2.44
1964	1944		1950		1950		1950		1962		1962		1962		1962	
Notes: Watershed conditions: The corn year of a corn, wheat, meadow, meadow rotation; prevailing practice. 1/ Rain gage 113. 2/ Precipitation and runoff records began Apr. 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT						COSHOCTON, OHIO		WATERSHED 106		26.20						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 113		Event of May 13, 1964													
4-13	.10	.00	5-13	RG	113		5-13	1528	.0000	.00						
4-18	.27E	T		1523	.00	.00		1538	.0039	T						
4-19	.47E	.00		1528	.96	.08		1539	.0258	T						
4-20	1.46E	.18		1535	3.43	.48		1540	.2308	T						
				1541	6.00	1.08										
4-21	.17E	.02		1549	1.12	1.23		1541	1.5385	.02						
4-22	.27	.00		1618	.17	1.31		1542	2.3395	.05						
4-27	.64	.00		1703	.03	1.33		1543	2.0089	.09						
4-29	.15	.00		1833	.01	1.34		1544	2.2123	.12						
4-30	.35	.00						1545	1.8945	.16						
5-12	.42	.00						1546	1.4749	.18						
5-13	.4/.10	.00						1547	1.2270	.21						
Watershed conditions: corn planted on May 5; area is bare.											1548	1.1125	.23			
											1550	.7184	.26			
											1551	.4361	.27			
											1553	.2543	.28			
											1555	.1170	.28			
											1603	.0189	.29			
											1633	.0039	.30			
											1643	.0011	.30			
											1703	.0000	.30			
											NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.5730. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.20-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.20-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 0838.					



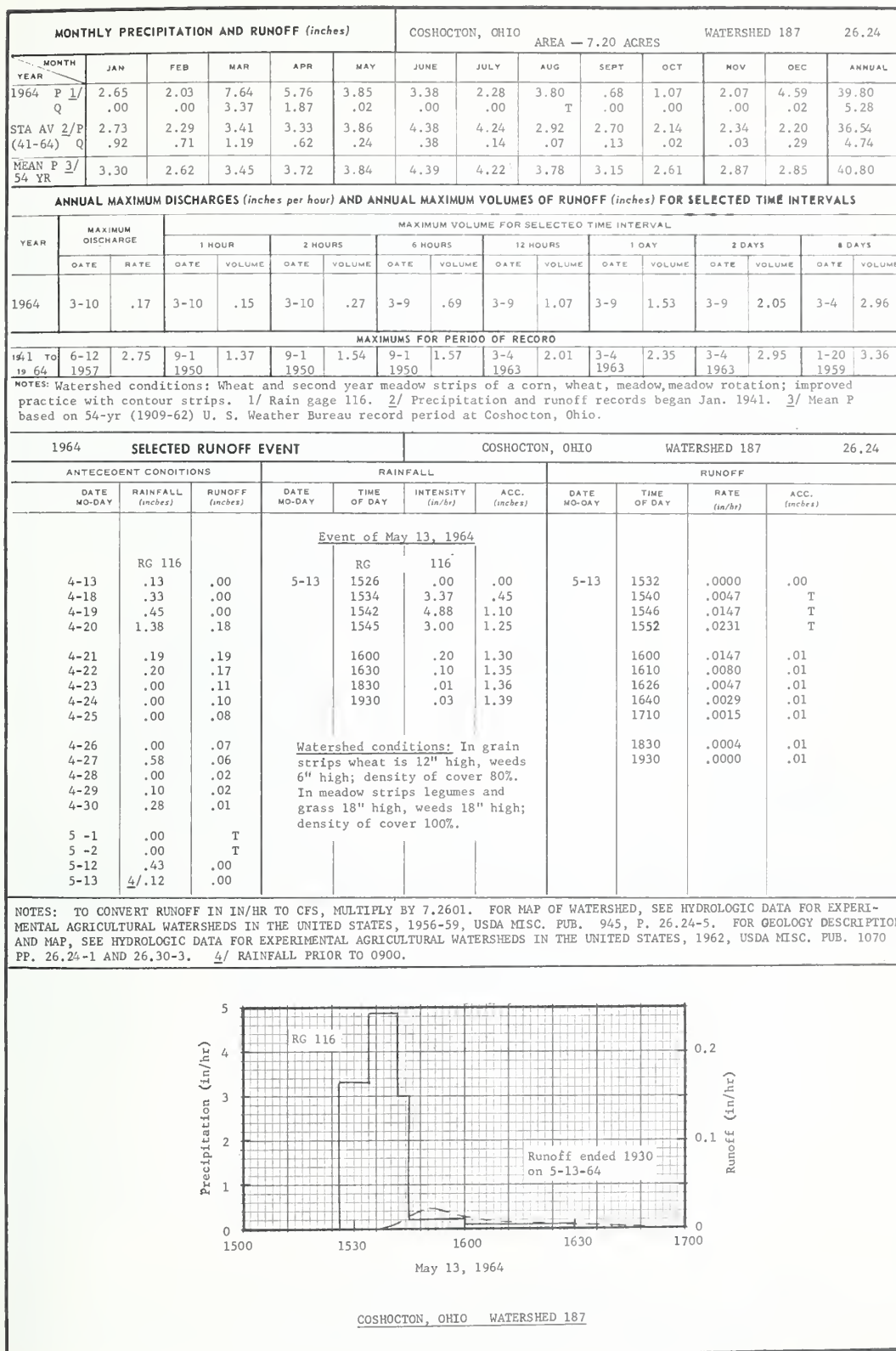
COSHOCTON, OHIO WATERSHED 106



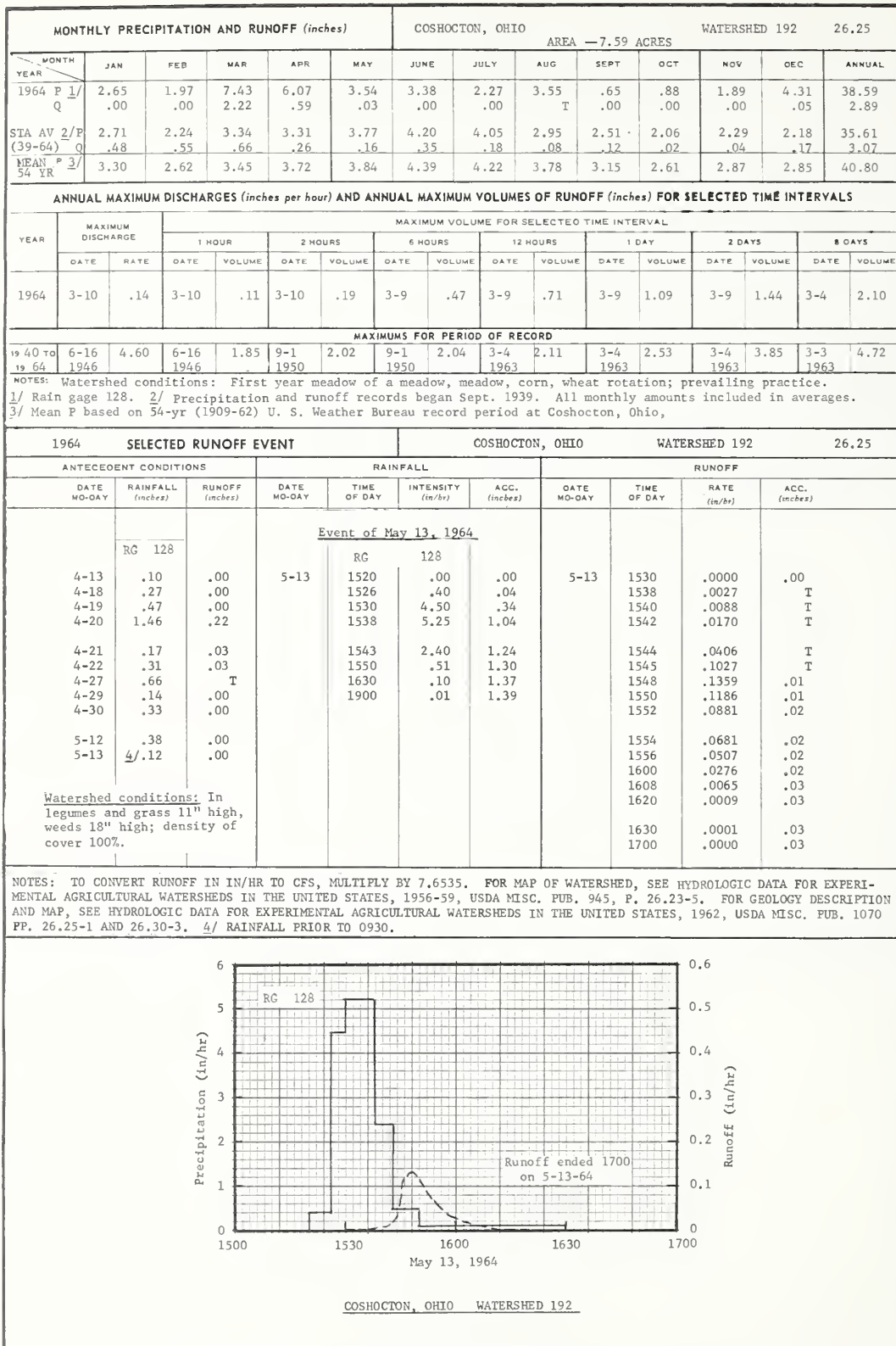
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MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCKTON, OHIO				AREA -- 7.40 ACRES				WATERSHED 185		26.23		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL					
1964	P 1/	2.65	1.97	7.43	6.07	3.54	3.38	2.27	3.55	.65	.88	1.89	4.31	38.59					
	Q	.00	.00	.83	.27	.11	T	.00	.09	.00	.00	.00	.02	1.32					
STA AV2/	P	2.71	2.24	3.34	3.31	3.77	4.20	4.05	2.95	2.51	2.06	2.29	2.18	35.61					
(39-64)	Q	.14	.23	.37	.15	.13	.32	.20	.14	.16	.06	.02	.05	1.97					
MEAN P 3/		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80					
54 YR																			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																			
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS				
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME			
1964	5-13	.46	5-13	.11	3-9	.12	3-9	.30	3-9	.44	3-9	.58	3-9	.70	3-4	.81			
MAXIMUMS FOR PERIOD OF RECORD																			
1939 TO	6-16	3.35	9-1	1.91	9-1	2.31	9-1	2.32	3-4	2.42	3-4	2.88	3-3	3.55	3-1	4.11			
1964	1946		1950		1950		1950		1963		1963		1963		1963				
NOTES: Watershed conditions: Corn and first year meadow strips of a corn, wheat, meadow, meadow rotation; improved practice with contour strips. 1/ Rain gage 128. 2/ Precipitation and runoff records began Sept. 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																			
1964 SELECTED RUNOFF EVENT							COSHOCKTON, OHIO				WATERSHED 185				26.23				
ANTECEDENT CONDITIONS						RAINFALL					RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)									
Event of May 13, 1964																			
RG 128			5-13		RG	128		5-13		1536	.0000	.00							
4-13	.10	.00			1520	.00	.00			1538	.0028	T							
4-18	.27	.00			1526	.40	.04			1542	.0208	T							
4-19	.47	.00			1530	4.50	.34			1543	.0867	T							
4-20	1.46	.10			1538	5.25	1.04												
4-21	.17	.01			1543	2.40	1.24			1544	.1053	T							
4-22	.31	.01			1550	.51	1.30			1545	.3284	.01							
4-27	.66	.00			1630	.10	1.37			1549	.4597	.03							
4-29	.14	.00			1900	.01	1.39			1552	.4088	.05							
4-30	.33	.00								1555	.3283	.07							
5-12	.38	.00								1556	.2734	.08							
5-13	4/.12	.00								1558	.2345	.09							
										1600	.1581	.09							
										1602	.1134	.10							
										1606	.0635	.10							
Watershed conditions: Corn strips were planted on May 4, and area is bare. Meadow strips consist of legumes and grass 12" high, weeds 20" high; density of cover 50%.																			
										1608	.0417	.11							
										1614	.0208	.11							
										1632	.0028	.11							
										1742	.0001	.11							
										1812	.0000	.11							
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 7.4616. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.23-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.23-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 0930.																			
<p>Precipitation (in/hr)</p> <p>Runoff (in/hr)</p> <p>Runoff ended 1812 on 5-13-64</p> <p>May 13, 1964</p>																			
COSHOCKTON, OHIO WATERSHED 185																			

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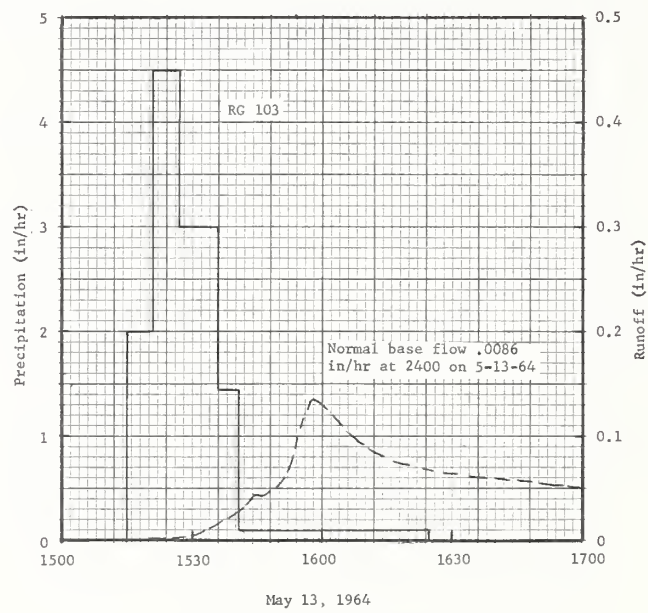
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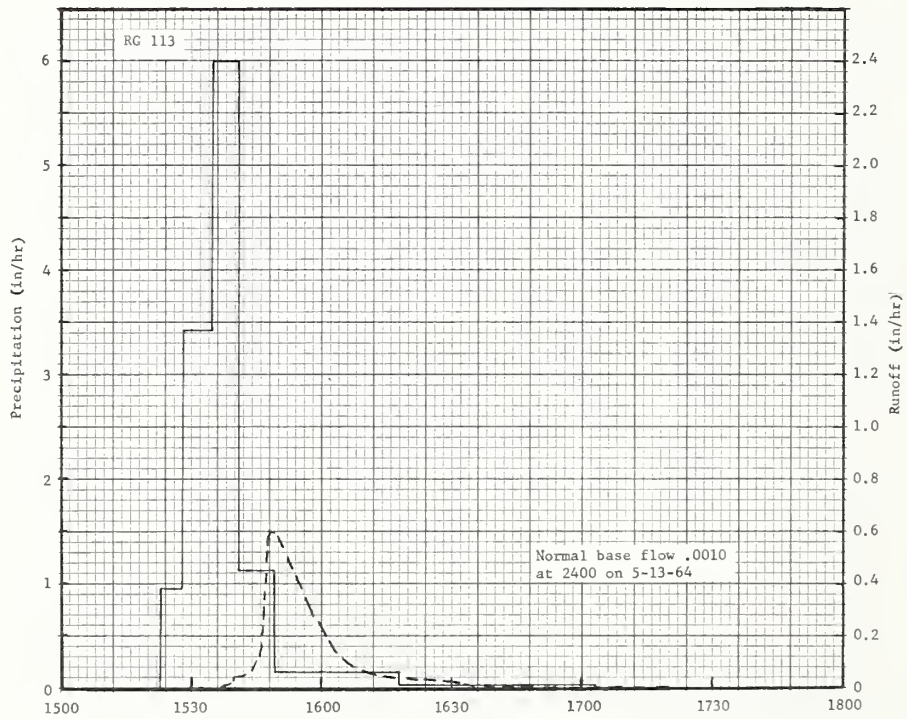
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO						WATERSHED 172 26.26					
						AREA —43.6 ACRES											
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964 P 1/ Q	2.74 .18	2.01 .01	7.44 3.53	5.68 3.25	3.47 .94	3.34 .05	2.87 T	3.70 .01	.61 .00	.76 .00	1.92 T	4.07 .08	38.61 8.05				
STA AV 2/P (39-64) Q	2.74 1.26	2.38 1.50	3.43 2.59	3.34 2.34	3.74 1.42	4.33 .85	4.26 .31	2.89 .10	2.43 .13	2.15 .12	2.33 .24	2.20 .57	36.22 11.43				
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL 4/														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1939	7-8	.60	7-8	.26	7-8	.30	7-8	.56	7-8	.68	4-17	.85	7-8	.90	4-15	2.01	
1949	1-27	.07	1-27	.07	1-27	.12	1-27	.25	1-27	.38	1-27	.51	1-26	.76	1-23	1.59	
1951	3-30	.07	3-30	.06	3-30	.10	1-14	.27	1-14	.47	1-3	.62	1-3	.87	2-12	2.16	
1955	3-4	.13	3-4	.11	3-4	.18	3-4	.36	3-4	.50	3-4	.67	3-4	.89	3-1	1.71	
1960	6-14	.21	6-14	.16	6-14	.21	6-14	.33	6-13	.43	6-13	.61	6-13	.82	1-12	.98	
1964	3-10	.17	3-10	.16	3-10	.29	3-9	.74	3-9	1.14	3-9	1.67	3-9	2.11	3-4	2.86	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 TO 1964	6-12 1957	2.64 E	6-12 1957	1.07 E	6-12 1957	1.23 E	6-12 1957	1.38 E	1-26 1952	1.48	1-26 1952	1.95	1-26 1952	2.34	4-3 1957	3.22	
Notes: Watershed conditions: Cover of 33% uneven age hardwoods, 67% pines planted in 1938. 1/ Rain gage 103. 2/ Precipitation and runoff records began Feb. 1939. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U.S. Weather Bureau record period at Coshocton, Ohio. 4/ Changed dates and values <u>underlined</u> since earlier publication.																	
1964 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO						WATERSHED 172 26.26					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of May 13, 1964																	
	RG 103			RG	103												
4-13	.12	.024	5-13	1515	.00	.00	5-13	1516	.0004	.000							
4-14	.00	.020		1521	2.00	.20		1520	.0013	T							
4-15	.00	.016		1527	4.50	.65		1528	.0038	T							
4-16	.00	.014		1536	3.00	1.10		1532	.0077	.001							
4-17	.00	.012		1541	1.44	1.22		1536	.0157	.002							
4-18	.31	.014		1625	.11	1.30		1538	.0209	.002							
4-19	.44	.052		1800	.01	1.31		1540	.0266	.003							
4-20	1.50	.639		1930	.02	1.34		1543	.0355	.004							
4-21	.18	.286						1544	.0434	.005							
4-22	.24	.208						1546	.0409	.007							
4-23	.00	.113						1552	.0664	.012							
4-24	.00	.069						1554	.0996	.015							
4-25	.00	.048						1556	.1219	.018							
4-26	.00	.039						1558	.1376	.023							
4-27	.61	.112						1602	.1219	.031							
4-28	.00	.071						1606	.1033	.039							
4-29	.14	.059						1612	.0858	.048							
4-30	.25	.093						1620	.0728	.059							
5-1	.00	.066						1636	.0603	.077							
5-2	.00	.048						1656	.0516	.095							
5-3	.00	.037						1700	.0496	.099							
5-4	.00	.029						1712	.0469	.108							
5-5	.00	.022						1720	.0432	.114							
5-6	.00	.016						1732	.0396	.123							
5-7	.00	.014						1740	.0362	.128							
5-8	.00	.014						1752	.0330	.135							
5-9	.00	.012						1820	.0266	.148							
5-10	.00	.010						1900	.0209	.164							
5-11	.00	.008						2000	.0162	.183							
5-12	.42	.010						2108	.0127	.199							
5-13	5/.13	6/.010						2240	.0102	.217							
								2400	7/.0086	.229							
Watershed conditions: One-third of area in hardwoods up to 70' high, shrubs 15" high, herbs 12" high, litter 1" deep; two-thirds of area reforested to pines in 1939, height 25', litter 1/2" deep.																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 43.963. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.26-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.26-1 AND 26.30-3. 5/ RAINFALL PRIOR TO 1000. 6/ RUNOFF PRIOR TO 1516. 7/ NORMAL BASE FLOW.																	

Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



COSHOCTON, OHIO WATERSHED 172

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO					AREA — 29.0 ACRES		WATERSHED 169		26.27		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964 P 1/	2.66	1.90	7.33	5.96	3.57	3.35	2.63	3.77	.62	.86	1.78	4.44	38.87				
Q	.01	.00	2.91	1.73	.33	.05	.01	.07	.00	.00	.00	.14	5.25				
STA AV 2/P	2.69	2.23	3.30	3.28	3.79	4.34	4.25	2.97	2.58	2.00	2.36	2.19	35.98				
(40-64) Q	.90	.95	1.46	.99	.49	.54	.27	.17	.17	.04	.10	.37	6.45				
MEAN P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
54 YR																	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	5-13	.60	3-10	.16	3-10	.27	3-9	.67	3-9	.98	3-9	1.40	3-9	1.78	3-4	2.42	
MAXIMUMS FOR PERIOD OF RECORD																	
19 40 TO	6-12	2.59	9-1	1.70	9-1	2.00	9-1	2.03	9-1	2.04	1-21	2.12E	1-21	2.37E	1-20	2.68E	
19 64	1957		1950		1950		1950		1950		1959		1959		1959		
NOTES: Watershed conditions: Cover of 6% hardwoods, 6% reforested, 48% grassland, 34% cultivated, 6% miscellaneous, contour strip cropped. 1/ Rain gage 113. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																	
1964 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO					WATERSHED 169		26.27				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE	RAINFALL	RUNOFF	DATE	TIME	INTENSITY	ACC.	DATE	TIME	RATE	ACC.							
MO-DAY	(inches)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)							
Event of May 13, 1964																	
	RG 113			RG	113												
4-13	.10	.013	5-13	1523	.00	.00	5-13	1530	.0005	.000							
4-14	.00	.006		1528	.96	.08		1532	.0019	T							
4-15	.00	.005		1535	3.43	.48		1536	.0084	T							
4-16	.00	.005		1541	6.00	1.08		1538	.0176	.001							
4-17	.00	.004		1549	1.12	1.23		1539	.0247	.001							
4-18	.27E	.011		1618	.17	1.31		1540	.0448	.002							
4-19	.47E	.032		1703	.03	1.33		1543	.0578	.004							
4-20	1.46E	.039		1833	.01	1.34		1545	.1094	.007							
4-21	.17E	.091						1546	.1392	.009							
4-22	.27	.084						1547	.2773	.013							
4-23	.00	.043						1548	.5985	.020							
4-24	.00	.030						1551	.5472	.049							
4-25	.00	.023						1553	.4787	.066							
4-26	.00	.019						1555	.4001	.080							
4-27	.64	.066						1557	.3115	.092							
4-28	.00	.032						1559	.2575	.102							
4-29	.15	.024						1601	.2069	.109							
4-30	.35	.056						1603	.1498	.115							
5 -1	.00	.022						1605	.1094	.120							
5 -2	.00	.015						1608	.0817	.124							
5 -3	.00	.011						1610	.0694	.127							
5 -4	.00	.008						1612	.0557	.129							
5 -5	.00	.007						1616	.0424	.132							
5 -6	.00	.004						1620	.0376	.135							
5 -7	.00	.003						1632	.0206	.141							
5 -8	.00	.003						1640	.0156	.143							
5 -9	.00	.003						1652	.0103	.146							
5-10	.00	.002						1720	.0052	.150							
5-11	.00	T						1800	.0034	.152							
5-12	.42	.005						1924	.0019	.156							
5-13	4/.10	5/.004						2140	.0013	.160							
								2400	6/.0010	.162							
Watershed conditions: 34% of the area was in corn-meadow strips. Corn area was bare, meadow strips 12" high; 28.6% of area in wheat-meadow strips. Wheat area 12" high, meadow area 18" high. 6.8% of the area was in second year meadow of a corn-wheat-meadow-meadow rotation, vegetation 12" high. 8.3% of area in pasture with a height of 6". 3% of area in hardwoods, 10% area, reforested in 1939, 3.4% in orchards. 5.9% in miscellaneous cover (Farmsteads, roads, etc.).																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 29.241. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.27-6. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.27-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 0838. 5/ RUNOFF PRIOR TO 1530. 6/ NORMAL BASE FLOW.																	

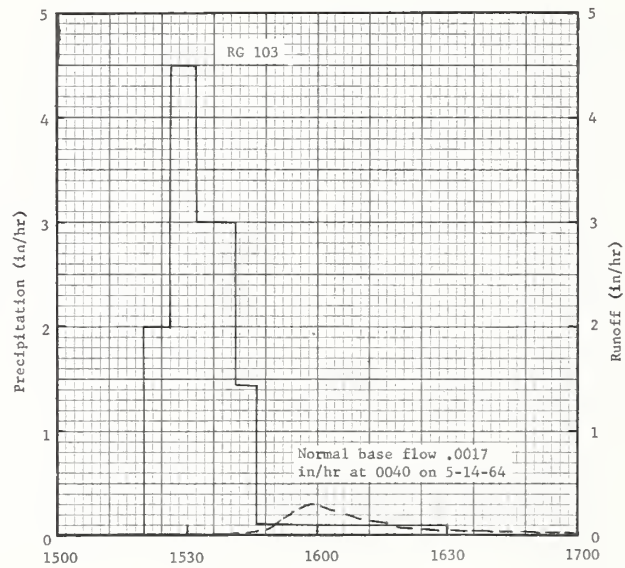


May 13, 1964

COSHOCOTON, OHIO WATERSHED 169

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCOTON, OHIO			AREA —75.6 ACRES		WATERSHED 177		26.28		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/	2.74	2.01	7.44	5.68	3.47	3.34	2.87	3.70	.61	.76	1.92	4.07	38.61		
	Q	.07	.01	4.29	2.39	.48	.11	T	.09	.00	.00	.00	.33	7.77		
STA AV	2/P	2.74	2.32	3.43	3.33	3.84	4.25	4.18	2.95	2.48	2.03	2.41	2.23	36.19		
(40-64)	Q	1.12	1.11	1.81	1.22	.59	.62	.28	.13	.14	.05	.16	.53	7.76		
MEAN	P 3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-13	.31	3-10	.15	3-10	.27	3-9	.68	3-9	1.03	3-9	1.57	3-9	2.11	3-4	3.22
MAXIMUMS FOR PERIOD OF RECORD																
19 40 TO	6-12	3.14	6-12	1.33	9-1	1.55	9-1	1.63	3-4	1.77	3-4	2.06	3-4	2.48	3-4	3.22
1964	1957		1957		1950		1950		1963		1963		1963		1964	
NOTES: Watershed conditions: Cover of 4% hardwoods, 6% reforested, 67% grassland, 17% cultivated, 6% miscellaneous, contour strip cropped. 1/ Rain gage 103. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT							COSHOCOTON, OHIO			WATERSHED 177			26.28			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE	RAINFALL	RUNOFF	DATE	TIME	INTENSITY	ACC.	DATE	TIME	RATE	ACC.	DATE	TIME	RATE	ACC.	DATE	TIME
MO-DAY	(inches)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY
Event of May 13, 1964																
	RG 103			RG	103											
4-13	.12	.029	5-13	1520	.00	.00	5-13	1520	.0006	.000						
4-14	.00	.020		1526	2.00	.20		1524	.0012	.000						
4-15	.00	.014		1532	4.50	.65		1528	.0024	.000						
4-16	.00	.012		1541	3.00	1.10		1532	.0060	.000						
4-17	.00	.010		1546	1.44	1.22		1536	.0095	.001						
4-18	.31	.015		1630	.11	1.30		1538	.0144	.001						
4-19	.44	.032		1800	.01	1.31		1541	.0290	.002						
4-20	1.50	.369		1930	.02	1.34		1542	.0342	.003						
4-21	.18	.174						1546	.0479	.006						
4-22	.24	.162						1549	.0606	.008						
4-23	.00	.085						1550	.0963	.010						
4-24	.00	.059						1551	.1377	.012						
4-25	.00	.045						1552	.1850	.014						
4-26	.00	.034						1554	.2367	.021						
4-27	.61	.075						1556	.2820	.030						
4-28	.00	.036						1558	.3056	.040						
4-29	.14	.031						1602	.2938	.060						
4-30	.25	.040						1604	.2584	.069						
5 -1	.00	.026						1608	.2151	.085						
5 -2	.00	.020						1610	.1850	.092						
5 -3	.00	.016						1616	.1377	.108						
5 -4	.00	.014						1620	.0963	.115						
5 -5	.00	.012						1626	.0640	.124						
5 -6	.00	.009						1634	.0424	.130						
5 -7	.00	.009						1640	.0316	.134						
5 -8	.00	.008						1642	.0290	.135						
5 -9	.00	.005						1648	.0228	.138						
5-10	.00	.003						1700	.0167	.142						
5-11	.00	.001						1712	.0124	.145						
5-12	.42	.013						1720	.0105	.146						
5-13	4/.13	5/.011						1740	.0076	.149						
								1900	.0041	.157						
								2140	.0024	.165						
								2400	.0018	.170						
								5-14	0040	6/.0017	.171					
Watershed conditions: 12% of area in corn, and area is bare; 14% of area in wheat strips, 8" high; 25% in pasture grass 6" high; 30% in meadow, grass, legumes and weeds 12" high; 17% in woods, trees to 70' in height; 2% in miscellaneous cover, (roads, farmsteads, etc.).																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 76.231. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.28-7. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.28-1 AND 26.30-3. 4/ RAINFALL PRIOR TO 1000. 5/ RUNOFF PRIOR TO 1520. 6/ NORMAL BASE FLOW.																

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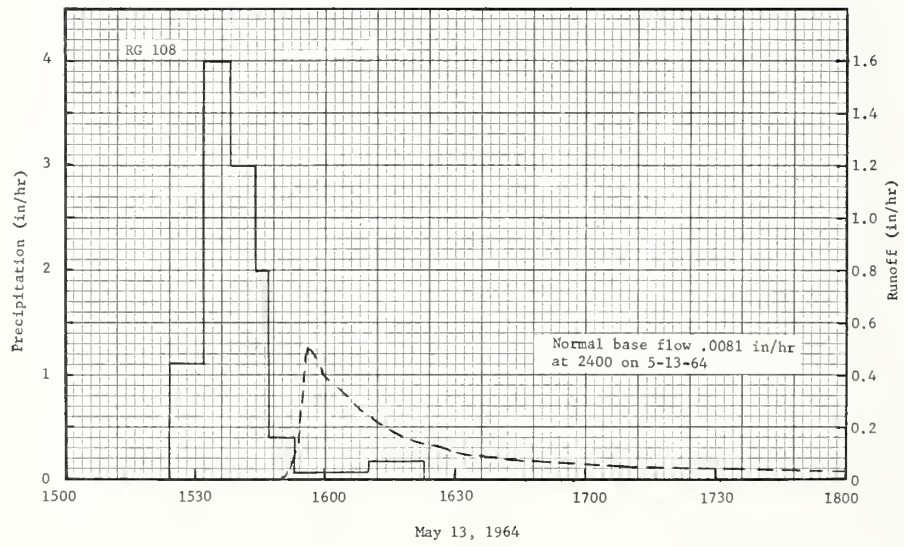


May 13, 1964

COSHOCTON, OHIO WATERSHED 177

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO		AREA — 303 ACRES		WATERSHED 196		26.30			
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/	2.68	2.04	7.88	5.78	3.69	3.44	2.34	3.88	.68	.95	2.02	4.62	40.00		
	Q	.19	.11	6.13	4.26	1.24	.22	.07	.17	.04	.05	.07	.69	13.24		
STA AV	2/P	2.75	2.48	3.64	3.48	3.80	4.64	4.25	2.91	2.55	2.20	2.41	2.28	37.39		
	(37-64) Q	1.81	1.93	2.96	2.44	1.44	1.19	.61	.31	.26	.20	.40	.97	14.52		
MEAN P	3/	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1957	6-12	3.72	6-12	1.31E	6-12	1.44E	6-28	1.55	6-28	1.67	6-28	1.80	6-28	1.94	4-3	3.05
1964	5-13	.51	3-10	.19	3-10	.35	3-9	.94	3-9	1.49	3-9	2.20	3-9	2.96	3-4	4.63
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO	6-12	3.72	6-12	1.31 E	6-12	1.44 E	6-16	1.63	1-21	2.06	1-21	2.92	1-20	3.21	3-4	4.63
1964	1957		1957		1957		1946		1959		1959		1959		1964	
NOTES: Watershed conditions: Cover of 27% woodland, 50% grassland, 19% cultivated, 4% miscellaneous, prevailing practice. 1/ Arithmetic average rain gages 108 and 116. 2/ Precipitation and runoff records began May 1937. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ Revision of previous date and volume for 8 days (underlined).																
1964 SELECTED RUNOFF EVENT							COSHOCTON, OHIO		WATERSHED 196		26.30					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE	RAINFALL	RUNOFF	DATE	TIME	INTENSITY	ACC.	DATE	TIME	RATE	ACC.						
MO-DAY	(inches)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)						
Event of May 13, 1964																
	2 RG 5/			RG	108											
4-13	.12	.0494	5-13	1524	.00	.00	5-13	1530	.0027	.0000						
4-14	.00	.0405		1532	1.12	.15		1540	.0073	.0008						
4-15	.00	.0320		1538	4.00	.55		1551	.0152	.0029						
4-16	.00	.0273		1544	3.00	.85		1552	.0445	.0034						
4-17	.00	.0239		1547	2.00	.95		1553	.0933	.0045						
4-18	.32	.0318		1553	.40	.99		1554	.1833	.0068						
4-19	.46	.0899		1610	.07	1.01		1555	.3273	.0111						
4-20	1.42	.7668		1623	.18	1.05		1556	.5106	.0181						
4-21	.20	.3170		1833	.01	1.06		1600	.3928	.0482						
4-22	.22	.2451		1903	.02	1.07		1604	.3535	.0731						
4-23	.00	.1331						1606	.3064	.0841						
4-24	.00	.0935						1608	.2749	.0937						
4-25	.00	.0820						1610	.2455	.1024						
4-26	.00	.0649						1616	.1833	.1239						
4-27	.63	.1566						1620	.1512	.1350						
4-28	.00	.0976						1626	.1270	.1489						
4-29	.10	.0759						1638	.0933	.1709						
4-30	.28	.0914						1650	.0733	.1876						
5-1	.00	.0671						1710	.0553	.2090						
5-2	.00	.0548						1732	.0419	.2269						
5-3	.00	.0454						1800	.0315	.2440						
5-4	.00	.0393						1830	.0245	.2580						
5-5	.00	.0349						1900	.0208	.2693						
5-6	.00	.0294						2000	.0164	.2880						
5-7	.00	.0261						2200	.0118	.3162						
5-8	.00	.0231						2400	8/.0081	.3361						
5-9	.00	.0191														
5-10	.00	.0160														
5-11	.00	.0148														
5-12	.47	.0228														
5-13	6/.13	7/.0177														
Watershed conditions: 30% in pasture, grass and weeds 6" high; 27% in meadow, grass and weeds 12" high; 10% in corn, area bare; 5% in wheat 12" high; 12% in protected woodland, and 2% reforested to pines; 12% in pastured woodland; 2% of area in miscellaneous cover (roads, etc.).																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 305.52. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.30-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 107C PP. 26.30-1 AND 26.30-3. 5/ ARITHMETIC AVERAGE RAIN GAGES 108 AND 116. 6/ RAINFALL PRIOR TO 0843. 7/ RUNOFF PRIOR TO 1530. 8/ NORMAL BASE FLOW.																

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COSHOCTON, OHIO WATERSHED 196

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO				AREA —122 ACRES				WATERSHED 10		26.31	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964 P1/ Q	2.83 .25	2.07 .07	7.42 3.55	5.82 2.24	3.85 .63	3.24 .10	3.84 .04	4.10 .21	.70 .04	.86 .02	1.99 .05	4.41 .36	41.13 7.56				
STA AV 2/P (39-64) Q	2.83 1.20	2.54 1.35	3.55 1.92	3.50 1.59	3.69 .87	4.40 .75	4.21 .38	2.90 .17	2.41 .12	2.22 .15	2.45 .24	2.38 .63	37.08 9.37				
MEAN P3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.14	3-9	.11	3-10	.19	3-9	.44	3-9	.79	3-9	1.32	3-9	1.81	3-4	2.77

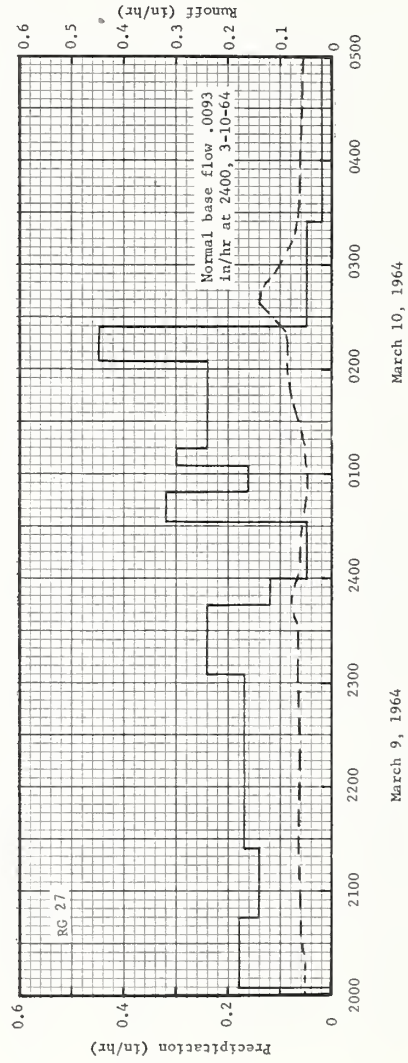
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-28 1957	1.76 E	6-28 1957	.98 E	6-28 1957	1.39 E	6-28 1957	1.80 E	6-28 1957	1.99 E	6-28 1957	2.14 E	6-28 1957	2.25 E	3-1 1963	2.94 E

NOTES: Watershed conditions: Cover of 21% cropland, 48% grassland, 25% woodland, 6% miscellaneous, conservation practice.
1/ Rain gage 27. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.

1964 SELECTED RUNOFF EVENT				COSHOCKTON, OHIO				WATERSHED 10				26.31	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of March 9 and 10, 1964													
	RG 27			RG	27								
2 -7	.00	.0070	3 -9	2005	.00	.00	3 -9	2020	.0543	.0000			
2 -8	.00	.0048		2045	.18	.12		2036	.0604	.0153			
2 -9	.04S	.0038		2125	.14	.21		2100	.0636	.0401			
2-10	.00	.0020		2305	.17	.50		2128	.0636	.0698			
2-11	.00	.0020		2345	.24	.66		2200	.0650	.1041			
2-12	.00	.0020		2400	.12	.69		2300	.0665	.1693			
2-13	.10S	.0020	3-10	0033	.05	.72		2332	.0689	.2051			
2-14	.00	.0020		0050	.32	.81		2346	.0798	.2224			
2-15	.18S	.0020		0105	.16	.85		2400	.0723	.2402			
2-16	.10S	.0020		0115	.30	.90	3-10	0020	.0650	.2631			
2-17	.00	.0020		0205	.24	1.10		0040	.0545	.2830			
2-18	.56S	.0020		0225	.45	1.25		0050	.0480	.2915			
2-19	.41S	.0020		0325	.05	1.30		0100	.0512	.2998			
2-20	.06S	.0020		0605	.02	1.35		0120	.0581	.3180			
2-21	.00	.0020		0825	.01	1.37		0140	.0764	.3405			
2-22	.00	.0020		0905	.04	1.40		0200	.0878	.3678			
2-23	.00	.0020		0958	.03	1.43		0216	.0878	.3912			
2-24	TS	.0020		1005	.17	1.45		0220	.0919	.3972			
2-25	.00	.0020		1305	.01	1.47		0230	.1130	.4143			
2-26	.12S	.0020						0240	.1406	.4354			
2-27	.00	.0020						0250	.1219	.4573			
2-28	.00	.0020E						0300	.1000	.4758			
2-29	.00	.0020E						0320	.0723	.5045			
3 -1	.00	.0097						0330	.0650	.5160			
3 -2	.00	.0344						0400	.0643	.5483			
3 -3	.00	.0686						0500	.0554	.6086			
3 -4	1.97	.4201						0600	.0445	.6583			
3 -5	.15	.2589						0632	.0484	.6827			
3 -6	.00	.0626						0644	.0508	.6926			
3 -7	.00	.0365						0724	.0429	.7237			
3 -8	.10	.0332						0820	.0371	.7605			
3 -9	4/2.40	5/.7471						0920	.0345	.7967			
								1020	.0325	.8298			
								1140	.0277	.8702			
								1240	.0241	.8962			
								1500	.0189	.9450			
								1740	.0150	.9900			
								2300	.0100	1.0555			
								2400	6/.0093	1.0652			

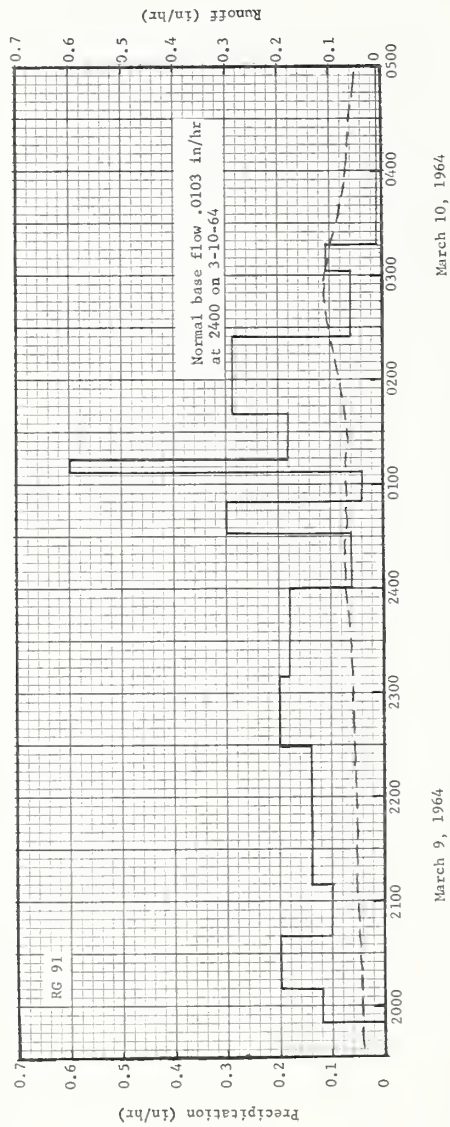
Watershed conditions: 12% in wheat, 3" high; 38% in meadow, grass and weeds 3" high; 19% in pasture, grass and weeds 3" high; 24% in woodland, litter cover 1/2", and 7% in miscellaneous cover (farmsteads, roads, etc.). Vegetation in dormant state.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 123.02. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.31-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.31-1 AND 26.37-2. 4/ RAINFALL PRIOR TO 2005. 5/ RUNOFF PRIOR TO 2020. 6/ NORMAL BASE FLOW.



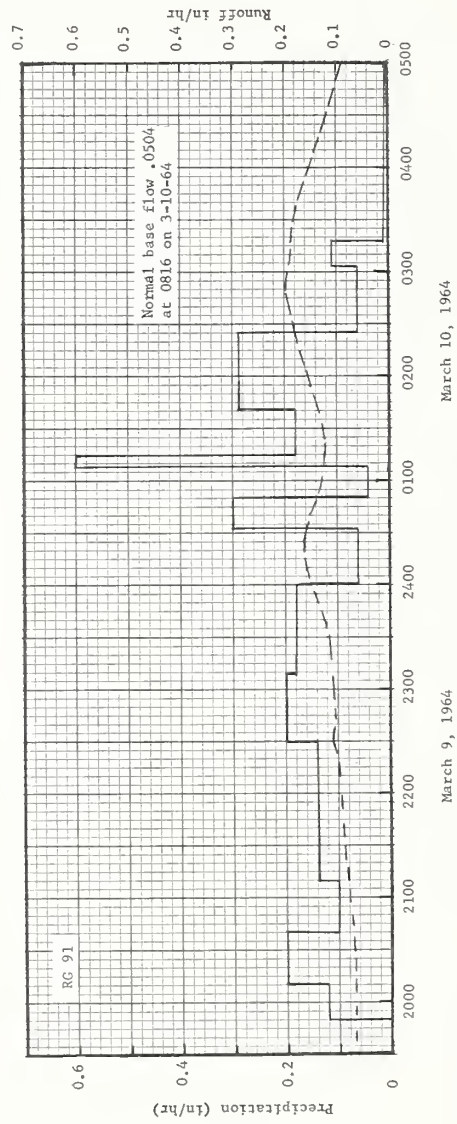
COSHOCOTON, OHIO WATERSHED 10

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO					AREA — 349 ACRES		WATERSHED 5		26.32	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/	2.80	2.08	7.22	5.77	3.16	3.24	2.74	4.54	.70	1.35	1.96	4.39	39.95		
	Q	.15	.05	3.70	2.62	.68	.16	.06	.23	.01	.01	.02	.59	8.28		
STA AV 2/P	2.83	2.47	3.53	3.49	3.75	4.30	4.23	2.95	2.50	2.16	2.51	2.41	37.13			
	(40-64) Q	1.45	1.49	2.29	1.85	1.10	.85	.46	.21	.12	.31	.73	11.03			
MEAN P 3/																
54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-2	.15	3-10	.11	3-10	.21	3-9	.47	3-9	.77	3-9	1.23	3-9	1.71	3-4	2.71
MAXIMUMS FOR PERIOD OF RECORD																
19 40 TO	6-28	1.09	6-28	.77	6-28	1.04	6-28	1.38	4/	1.58	1-21	2.31	1-20	2.64	1-20	3-04
19 64	1957		1957		1957		1957				1959		1959		1959	
NOTES: Watershed conditions: Cover of 20% cropland, 54% grassland, 23% woodland, 3% miscellaneous, improved practice. 1/ Rain gage 91. 2/ Precipitation and runoff records began Jan. 1940. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ June 28, 1957, and March 4, 1963.																
1964 SELECTED RUNOFF EVENT						COSHOCTON, OHIO					WATERSHED 5		26.32			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 9 and 10, 1964																
	RG 91			RG	91											
2 -7	.00	.0061	3 -9	1949	.00	.00	3 -9	2030	.0426	.0000						
2 -8	.00	.0029		2009	.12	.04		2100	.0523	.0238						
2 -9	.04S	.0014		2039	.20	.14		2120	.0537	.0414						
2-10	.00	.0009		2109	.10	.19		2140	.0537	.0593						
2-11	.00	.0007		2229	.14	.38		2210	.0577	.0872						
2-12	.00	.0007		2309	.20	.51		2220	.0591	.0969						
2-13	.10S	.0011		2400	.18	.66		2300	.0591	.1363						
2-14	.00	.0012	3-10	0032	.06	.69		2400	.0747	.2032						
2-15	.16S	.0011		0050	.30	.78	3-10	0020	.0747	.2281						
2-16	.10S	.0010		0107	.04	.79		0040	.0693	.2521						
2-17	.00	.0011		0114	.60	.86		0120	.0693	.2983						
2-18	.56S	.0013		0140	.18	.94		0146	.0747	.3296						
2-19	.41S	.0013		0225	.29	1.16		0200	.0864	.3484						
2-20	.06S	.0012		0302	.06	1.20		0240	.1088	.4125						
2-21	.00	.0011		0318	.11	1.23		0252	.1162	.4350						
2-22	.00	.0010		0550	.01	1.26		0300	.1139	.4504						
2-23	.00	.0010		0630	.06	1.30		0320	.0995	.4859						
2-24	TS	.0009		0910	.01	1.34		0340	.0824	.5162						
2-25	.00	.0010		1110	.02	1.38		0400	.0710	.5418						
2-26	.12S	.0012		1210	.01	1.39		0430	.0608	.5755						
2-27	.00	.0011						0500	.0537	.6042						
2-28	.00	.0010						0530	.0472	.6294						
2-29	.00	.0010						0600	.0426	.6518						
3 -1	.00	.0035						0604	.0415	.6546						
3 -2	.00	.0427						0620	.0426	.6658						
3 -3	.00	.0671						0710	.0426	.7014						
3 -4	2.00	.3902						0728	.0404	.7138						
3 -5	.14	.2507						0800	.0364	.7343						
3 -6	.00	.0830						0840	.0344	.7579						
3 -7	.00	.0534						0900	.0324	.7690						
3 -8	.10	.0440						0950	.0307	.7953						
3 -9	5/2.13	6/.6632						1110	.0290	.8351						
Watershed conditions: 12% in wheat, 3" high; 28% in meadow, grass and weeds 3" high; 30% in pasture, grass and weeds 3" high; 6% in idle land, grass and weeds 4" high; 22% in woodland, litter cover 1/2"; and 2% in miscellaneous cover (farmsteads, roads, etc.). Vegetation in dormant state.											1200	.0273	.8585			
											1310	.0227	.8877			
											1400	.0201	.9056			
											1510	.0188	.9282			
											1700	.0158	.9599			
											2030	.0124	1.0094			
											2400	7/.0103	1.0492			
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 351.91. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 26.32-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.32-1 AND 26.37-2. 5/ RAINFALL PRIOR TO 1949. 6/ RUNOFF PRIOR TO 2030. 7/ NORMAL BASE FLOW.																



COSHOOTON, OHIO WATERSHED 5

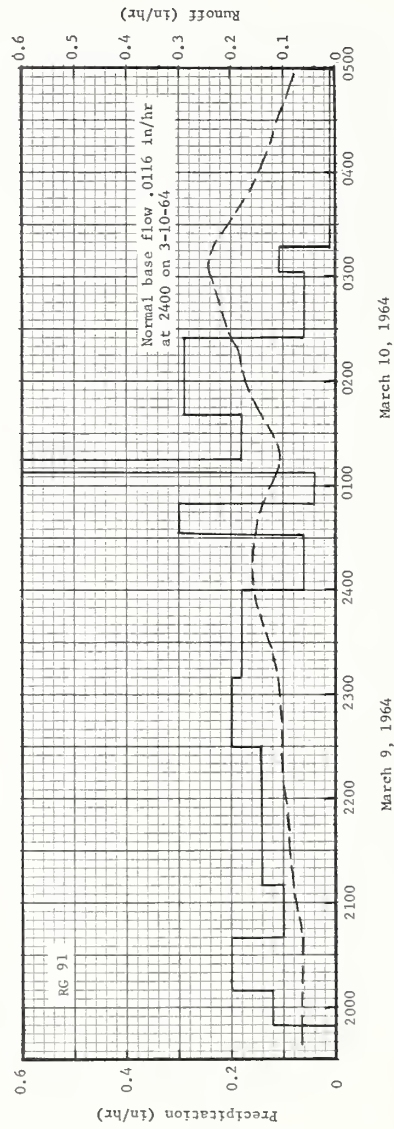
MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCOTON, OHIO AREA — 920 ACRES (1.44 SQ.MILES)				WATERSHED 92 26.33					
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	2.80 .19	2.08 .07	7.22 5.12	5.77 2.98	3.16 .72	3.24 .16	2.74 .05	4.54 .26	.70 T	1.35 .01	1.96 .04	4.39 .65	39.95 10.25			
STA AV 2/P (39-64) Q	2.81 1.57	2.54 1.71	3.54 2.50	3.50 2.03	3.66 1.14	4.36 .91	4.27 .46	2.91 .20	2.44 .13	2.24 .19	2.44 .37	2.37 .84	37.08 12.05			
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		5 HOURS		12 HOURS		1 DAY		2 DAYS		5 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.20	3-10	.22	3-10	.36	3-9	.89	3-9	1.41	3-9	2.07	3-9	2.64	3-4	3.96
MAXIMUMS FOR PERIOD OF RECORD																
19 39 to 19 64	6-28 1957	.62	6-28 1957	.52	6-28 1957	.82	6-28 1957	1.24	4/	1.60	1-21 1959	2.41	4/	2.71	3-4 1964	3.96
NOTES: Watershed conditions: Cover of 16% cropland, 59% grassland, 21% woodland, 4% miscellaneous, improved practice. 1/ Rain gage 91. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio. 4/ Jan. 21, 1959 and Mar. 4, 1963.																
1964 SELECTED RUNOFF EVENT							COSHOCOTON, OHIO				WATERSHED 92 26.33					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 9 and 10, 1964																
	RG 91			RC	91											
2 -7	.00	.0080	3 -9	1949	.00	.00	3 -9	2030	.0703	.0000						
2 -8	.00	.0041		2009	.12	.04		2040	.0727	.0119						
2 -9	.04S	.0026E		2039	.20	.14		2124	.0909	.0716						
2-10	.00	.0018E		2109	.10	.19		2230	.1078	.1804						
2-11	.00	.0012E		2229	.14	.38		2300	.1110	.2357						
2-12	.00	.0012		2309	.20	.51		2320	.1143	.2732						
2-13	.10S	.0017		2400	.18	.66		2340	.1261	.3133						
2-14	.00	.0020	3-10	0032	.06	.69		2350	.1380	.3353						
2-15	.16S	.0018		0050	.30	.78		2400	.1498	.3593						
2-16	.10S	.0017		0107	.04	.79	3-10	0010	.1585	.3850						
2-17	.00	.0020		0114	.60	.86		0016	.1617	.4010						
2-18	.56S	.0021		0140	.18	.94		0026	.1617	.4280						
2-19	.41S	.0020		0225	.29	1.16		0040	.1531	.4647						
2-20	.06S	.0020E		0302	.06	1.20		0046	.1391	.4793						
2-21	.00	.0019E		0318	.11	1.23		0120	.1229	.5511						
2-22	.00	.0017E		0550	.01	1.26		0140	.1380	.5943						
2-23	.00	.0017E		0630	.06	1.30		0150	.1466	.6181						
2-24	.TS	.0017E		0910	.01	1.34		0200	.1563	.6433						
2-25	.00	.0020		1110	.02	1.38		0214	.1682	.6812						
2-26	.12S	.0020		1210	.01	1.39		0230	.1854	.7283						
2-27	.00	.0017						0240	.1930	.7598						
2-28	.00	.0016						0246	.1951	.7792						
2-29	.00	.0020						0300	.1951	.8248						
3 -1	.00	.0057						0310	.1908	.8569						
3 -2	.00	.0415						0330	.1833	.9193						
3 -3	.00	.0716						0346	.1714	.9666						
3 -4	2.00	.5570						0400	.1552	1.0047						
3 -5	.14	.3411						0410	.1434	1.0295						
3 -6	.00	.1019						0420	.1294	1.0523						
3 -7	.00	.0630						0500	.0951	1.1271						
3 -8	.10	.0501						0520	.0829	1.1568						
3 -9	5/2.13	5/.9338						0546	.0727	1.1905						
								0640	.0608	1.2497						
								0816	7/.0504	1.3397						
Watershed conditions: 29% in meadow, grass and weeds 3" high; 14% in wheat 3" high; 20% in pasture, grass 3" high; 29% in woodland, litter cover 1/2"; 5% in idle land, and 3% in miscellaneous cover (roads, etc.). Vegetation in dormant state.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 927.64. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 26.32-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, PP. 26.33-1 AND 26.37-2. 5/ RAINFALL PRIOR TO 1949. 6/ RUNOFF PRIOR TO 2030. 7/ NORMAL BASE FLOW.																



COSHOCTON, OHIO WATERSHED 92

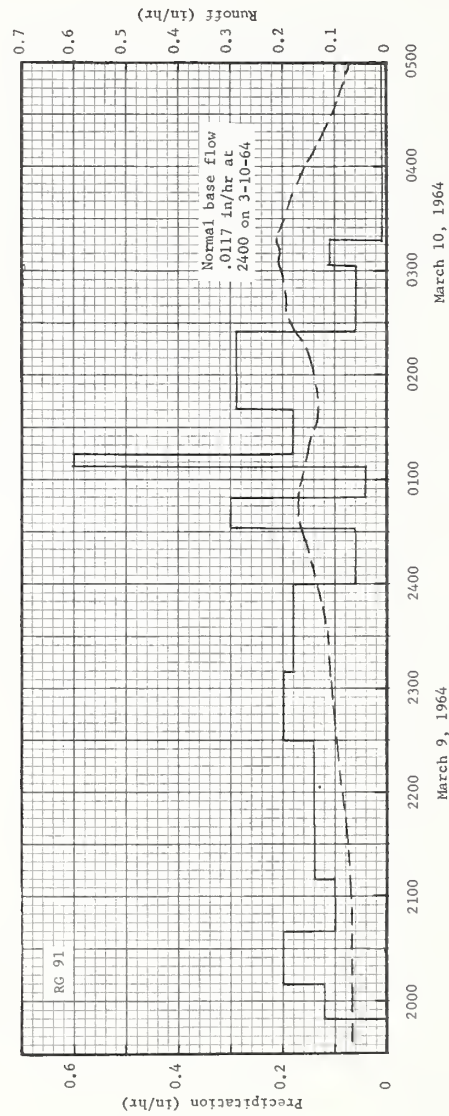
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCKTON, OHIO AREA — 1,520 ACRES (2.37 SQ.MILES)				WATERSHED 94 26.34						
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	2.82 .19	2.08 .09	7.32 5.11	5.80 3.12	3.50 .85	3.24 .21	3.29 .09	4.32 .30	.70 .01	1.10 .02	1.98 .05	4.40 .72	40.55 10.76			
STA AV 2/P (39-64) Q	2.81 1.57	2.54 1.69	3.54 2.51	3.50 2.01	3.67 1.15	4.36 .97	4.26 .49	2.91 .23	2.43 .14	2.23 .19	2.44 .35	2.37 .80	37.06 12.10			
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
1964	3-10	.25	3-10	.23	3-10	.41	3-9	.94	3-9	1.40	3-9	2.00	3-9	2.57	3-4	3.88
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 19 64	6-28 1957	.92	6-28 1957	.77	6-28 1957	1.22	6-28 1957	1.79	3-4 1963	2.14	1-21 1959	2.95	1-20 1959	3.27	3-4 1963	3.95
NOTES: Watershed conditions: Cover of 15% cropland, 57% grassland, 24% woodland, 4% miscellaneous, improved practice. 1/ Arithmetic average rain gages 27 and 91. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT						COSHOCKTON, OHIO				WATERSHED 94				26.34		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 9 and 10, 1964																
	2 RG 4/			RG -	91											
2 -7	.00	.0083	3 -9	1949	.00	.00	3 -9	2030	.0620	.0000						
2 -8	.00	.0054E		2009	.12	.04		2050	.0686	.0218						
2 -9	.04S	.0038E		2039	.20	.14		2116	.0811	.0540						
2-10	.00	.0026E		2109	.10	.19		2200	.0974	.1198						
2-11	.00	.0021E		2229	.14	.38		2214	.1013	.1430						
2-12	.00	.0021		2309	.20	.51		2250	.1013	.2036						
2-13	.10S	.0023		2400	.18	.66		2320	.1144	.2572						
2-14	.00	.0024	3-10	0032	.06	.69		2346	.1406	.3119						
2-15	.17S	.0023		0050	.30	.78		2400	.1549	.3464						
2-16	.10S	.0023		0107	.04	.79	3-10	0010	.1582	.3725						
2-17	.00	.0023		0114	.60	.86		0020	.1582	.3988						
2-18	.56S	.0024		0140	.18	.94		0030	.1549	.4249						
2-19	.41S	.0025		0225	.29	1.16		0050	.1406	.4742						
2-20	.06S	.0026		0302	.06	1.20		0110	.1308	.5196						
2-21	.00	.0023E		0318	.11	1.23		0120	.1308	.5414						
2-22	.00	.0021E		0550	.01	1.26		0148	.1549	.6077						
2-23	.00	.0021E		0630	.06	1.30		0200	.1700	.6402						
2-24	.00	.0021E		0910	.01	1.34		0220	.1883	.6998						
2-25	.00	.0024		1110	.02	1.38		0230	.2072	.7327						
2-26	.12S	.0025		1210	.01	1.39		0248	.2269	.7978						
2-27	.00	.0022						0258	.2386	.8367						
2-28	.00	.0021						0304	.2465	.8610						
2-29	.00	.0024						0308	.2465	.8774						
3 -1	.00	.0064						0320	.2288	.9250						
3 -2	.00	.0368						0330	.2072	.9613						
3 -3	.00	.0726						0340	.1844	.9939						
3 -4	1.98	.5610						0350	.1608	1.0226						
3 -5	.14	.3390						0404	.1406	1.0579						
3 -6	.00	.0953						0410	.1321	1.0715						
3 -7	.00	.0583						0436	.1013	1.1215						
3 -8	.10	.0509						0514	.0719	1.1754						
3 -9	5/2.36	6/.8954						0600	.0558	1.2243						
								0710	.0486	1.2840						
								0810	.0420	1.3294						
								1000	.0350	1.3991						
								1200	.0297	1.4649						
								1400	.0220	1.5149						
								1800	.0158	1.5897						
								2400	7/.0116	1.6701						
Watershed conditions: 25% in meadow, 20% in pasture, 13% in small grain crops, mostly wheat, 6% idle land, 32% in woodland, and 4% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1532.7. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.34-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.34-1, AND 26.37-2. 4/ ARITHMETIC AVERAGE RAIN GAGES 91 AND 27. 5/ RAINFALL PRIOR TO 1949. 6/ RUNOFF PRIOR TO 2030. 7/ NORMAL BASE FLOW.																

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COSHOCOTON, OHIO WATERSHED 94

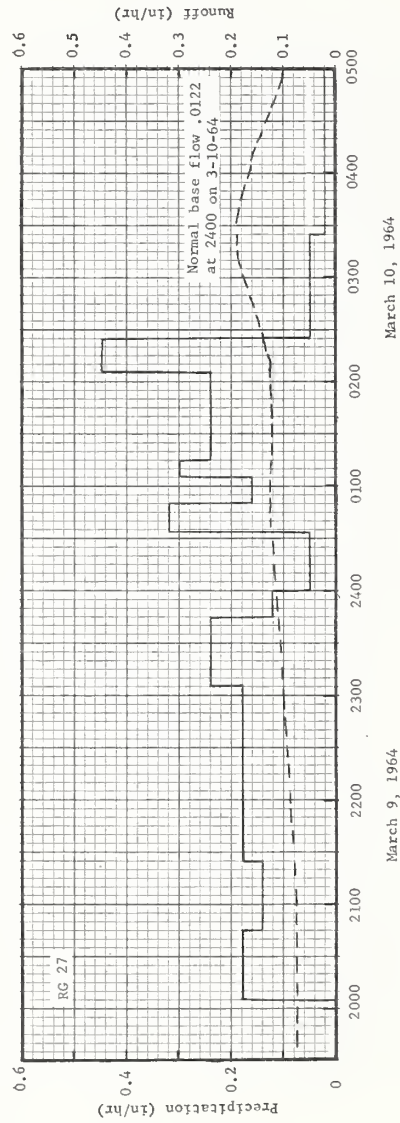
MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		WATERSHED 95		26.35						
						AREA — 2,570 ACRES (4.02 SQ. MILES)										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P1/ Q	2.82 .24	2.08 .10	7.32 4.80	5.80 3.04	3.50 .86	3.24 .20	3.29 .09	4.32 .24	.70 T	1.10 .01	1.98 .05	4.40 .67	40.55 10.30		
STA AV	2/P	2.83	2.54	3.55	3.51	3.68	4.40	4.21	2.90	2.42	2.23	2.45	2.38	37.10		
(39-64)	Q	1.54	1.67	2.52	2.04	1.14	.91	.46	.21	.13	.17	.35	.80	11.94		
MEAN P	3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.21	3-10	.20	3-10	.37	3-9	.92	3-9	1.37	3-9	1.89	3-9	2.37	3-4	3.65
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO	6-28	.61	6-28	.56	6-28	.95	3-4	1.58	3-4	2.32	3-4	2.78	3-4	3.49	3-2	4.24
1964	1957		1957		1957		1963		1963		1963		1963		1963	
NOTES: Watershed conditions: Cover of 15% cropland, 55% grassland, 26% woodland, 4% miscellaneous, improved practice. 1/ Arithmetic average rain gages 27 and 91. 2/ Precipitation and runoff records began Jan. 1939. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT						COSHOCTON, OHIO				WATERSHED 95				26.35		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 9 and 10, 1964																
2 RG 4/			RG	91												
2 -7	.00	.0089E	3 -9	1949	.00	.00	3 -9	2058	.0718	.0000						
2 -8	.00	.0051E		2009	.12	.04		2133	.0772	.0435						
2 -9	.04S	.0036E		2039	.20	.14		2203	.0899	.0853						
2-10	.00	.0030E		2109	.10	.19		2313	.1108	.2035						
2-11	.00	.0026E		2229	.14	.38		2333	.1189	.2418						
2-12	.00	.0025		2309	.20	.51		2400	.1367	.2993						
2-13	.10S	.0026		2400	.18	.66		0013	.1475	.3301						
2-14	.00	.0026	3-10	0032	.06	.69		0035	.1675	.3878						
2-15	.17S	.0025		0050	.30	.78		0043	.1726	.4105						
2-16	.10S	.0026		0107	.04	.79		0053	.1726	.4393						
2-17	.00	.0027		0114	.60	.86		0123	.1459	.5209						
2-18	.56S	.0024		0140	.18	.94		0133	.1382	.5446						
2-19	.41S	.0027		0225	.29	1.16		0149	.1382	.5814						
2-20	.06S	.0032		0302	.06	1.20		0213	.1529	.6396						
2-21	.00	.0029		0318	.11	1.23		0223	.1675	.6663						
2-22	.00	.0024		0550	.01	1.26		0233	.1926	.6964						
2-23	.00	.0022		0630	.06	1.30		0237	.1980	.7094						
2-24	TS	.0022		0910	.01	1.34		0247	.1980	.7424						
2-25	.00	.0029		1110	.02	1.38		0257	.2031	.7758						
2-26	.12S	.0032		1210	.01	1.39		0303	.2104	.7965						
2-27	.00	.0026						0313	.2069	.8313						
2-28	.00	.0025						0319	.2104	.8521						
2-29	.00	.0030						0331	.1961	.8928						
3 -1	.00	.0070						0343	.1853	.9309						
3 -2	.00	.0379						0355	.1675	.9662						
3 -3	.00	.0789						0407	.1428	.9972						
3 -4	1.98	.4779						0418	.1239	1.0217						
3 -5	.14	.3594						0429	.1108	1.0432						
3 -6	.00	.1183						0503	.0757	1.0948						
3 -7	.00	.0805						0533	.0618	1.1292						
3 -8	.10	.0624						0613	.0510	1.1665						
3 -9	5/2.13	6/.7572						0917	.0357	1.2987						
								1200	.0286	1.3863						
								1433	.0215	1.4494						
								1613	.0186	1.4827						
								2400	7/.0117	1.5954						
Watershed conditions: 11% in small grain crops, mostly wheat, 27% in meadow, 20% in pasture, 32% in woodland, 5% in idle land and 5% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2591.4. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.34-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.35-1 AND 26.37-2. 4/ ARITHMETIC AVERAGE RAIN GAGES 91 AND 27. 5/ RAINFALL PRIOR TO 1949. 6/ RUNOFF PRIOR TO 2058. 7/ NORMAL BASE FLOW.																



COSHOCOTON, OHIO WATERSHED 95

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO AREA — 4,580 ACRES (7.16 SQ.MILES)					WATERSHED 97 26.36					
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P1/	2.73	2.08	7.27	5.75	3.53	3.32	3.42	3.90	.66	.84	1.86	4.34	39.70		
	Q	.19	.09	5.15	3.03	.86	.18	.07	.17	T	.01	.04	.61	10.40		
STA AV	2/P	3.03	2.48	3.55	3.53	3.74	4.51	4.22	2.86	2.39	2.22	2.41	2.37	37.31		
	(37-64) Q	1.82	1.66	2.51	2.10	1.18	1.01	.51	.23	.13	.16	.34	.83	12.48		
MEAN P 3/		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
54 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-10	.19	3-10	.18	3-10	.34	3-9	.81	3-9	1.33	3-9	2.07	3-9	2.70	3-4	4.06
MAXIMUMS FOR PERIOD OF RECORD																
19 37 TO 19 64	6-28 1957	.72	6-28 1957	.66	6-28 1957	1.15	1-24 1937	1.89	1-21 1959	2.32	1-21 1959	3.24	1-20 1959	3.54	1-18 1937	6.77
NOTES: Watershed conditions: Cover of 18% cropland, 50% grassland, 28% woodland, 4% miscellaneous, improved practice. 1/ Arithmetic average rain gages 27, 54, 56, and 91. 2/ Precipitation and runoff records began Jan. 1937. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT						COSHOCTON, OHIO					WATERSHED 97 26.36					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 9 and 10, 1964																
	4 RG 4/			RG	27											
2 -7	.00	.0091E	3 -9	2005	.00	.00	3 -9	2100	.0795	.0000						
2 -8	.00	.0051E		2045	.18	.12		2150	.0892	.0697						
2 -9	.04S	.0036E		2125	.14	.21		2240	.0981	.1476						
2-10	.00	.0031E		2305	.18	.50		2330	.1061	.2324						
2-11	.00	.0028E		2345	.24	.66		2400	.1141	.2873						
2-12	.00	.0026		2400	.12	.69		0010	.1191	.3067						
2-13	.09S	.0026	3-10	0033	.05	.72		0030	.1232	.3471						
2-14	.00	.0026		0050	.32	.81		0050	.1264	.3887						
2-15	.18S	.0026		0105	.16	.85		0110	.1232	.4303						
2-16	.11S	.0026		0115	.30	.90		0130	.1212	.4710						
2-17	.00	.0025		0205	.24	1.10		0150	.1212	.5115						
2-18	.56S	.0022		0225	.45	1.25		0200	.1232	.5318						
2-19	.41S	.0025		0325	.05	1.30		0210	.1264	.5526						
2-20	.06S	.0028		0605	.02	1.35		0216	.1321	.5656						
2-21	TS	.0024		0825	.01	1.37		0230	.1442	.5978						
2-22	.00	.0019E		0905	.04	1.40		0240	.1559	.6228						
2-23	.00	.0018E		0958	.03	1.43		0250	.1667	.6497						
2-24	.00	.0018E		1005	.17	1.45		0300	.1754	.6782						
2-25	.00	.0018E		1305	.01	1.47		0310	.1819	.7079						
2-26	.12S	.0018E						0320	.1862	.7386						
2-27	.00	.0021						0334	.1862	.7820						
2-28	.00	.0023						0350	.1775	.8307						
2-29	.00	.0028						0410	.1602	.8870						
3 -1	.00	.0061						0420	.1459	.9123						
3 -2	.00	.0448						0430	.1321	.9355						
3 -3	.00	.0794						0440	.1191	.9562						
3 -4	1.96	.5564						0510	.0996	1.0107						
3 -5	.14	.4111						0530	.0903	1.0424						
3 -6	.00	.0955						0550	.0829	1.0712						
3 -7	.00	.0537						0700	.0697	1.1604						
3 -8	.08	.0434						0810	.0606	1.2364						
3 -9	5/2.34	6/1.0522						0940	.0470	1.3152						
								1130	.0396	1.3934						
								1320	.0292	1.4541						
Watershed conditions: 9% in small grain crops, 30% in meadow, 22% in pasture, 30% in woodland, 5% in idle land, and 4% in miscellaneous cover. All vegetation in dormant state.										1540	.0216	1.5119				
										1830	.0174	1.5671				
										2120	.0144	1.6119				
										2400	7/.0122	1.6473				
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4618.1. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.34-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.36-1 AND 26.37-2. 4/ ARITHMETIC AVERAGE RAIN GAGES 27, 54, 56 AND 91. 5/ RAINFALL PRIOR TO 2005. 6/ RUNOFF PRIOR TO 2100. 7/ NORMAL BASE FLOW.																

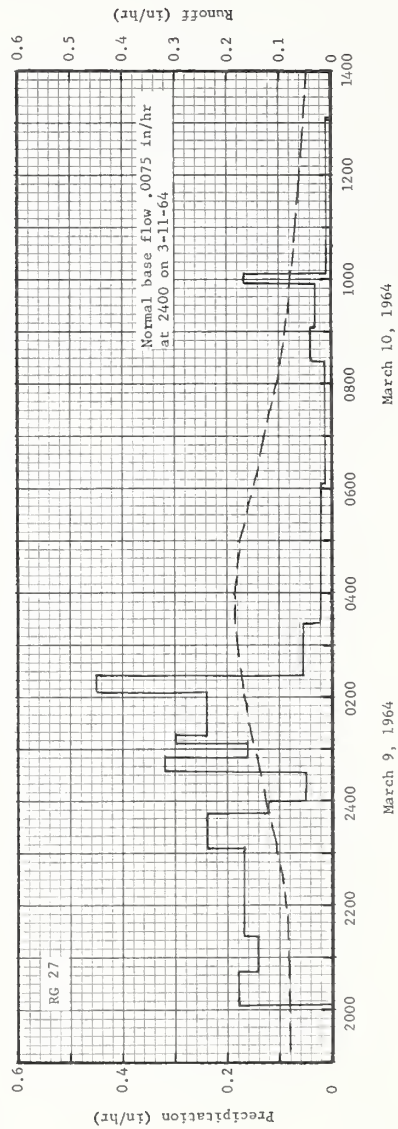
Cooperative Research Project of USDA and Ohio Agricultural Experiment Station



COSHOOTON, OHIO WATERSHED 97

MONTHLY PRECIPITATION AND RUNOFF (inches)							COSHOCTON, OHIO AREA — 17,400 ACRES (27.2 SQ. MILES)							WATERSHED 994 26.37		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P1/ Q2/	2.69 .21	2.10 .14	7.30 6.19	5.73 3.70	3.22 .91	3.06 .22	3.77 .16	4.12 .33	.62 .02	.83 .02	1.84 .06	4.33 .79	39.61 12.75		
STA AV	3/P	3.03	2.48	3.55	3.54	3.73	4.50	4.25	2.86	2.39	2.27	2.43	2.39	37.42		
(36-64)	Q	1.97	1.87	2.63	2.19	1.28	1.06	.59	.27	.16	.21	.42	.89	13.54		
MEAN P 4/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
1964	3-10	.18	3-10	.18	3-10	.35	3-10	.93	3-9	1.63	3-9	2.40	3-9	3.15	3-4	4.79
MAXIMUMS FOR PERIOD OF RECORD																
1936 to 19 64	6-28 1957	.44	6-28 1957	.43	6-28 1957	.81	6-28 1957	1.71	6-28 1957	2.16	1-21 1959	3.06	1-21 1959	3.45	3-4 1964	4.79
NOTES: Watershed conditions: Cover of 15% cropland, 55% grassland, 26% woodland, 4% miscellaneous, generally under improved practice. 1/ Arithmetic average rain gages 27, 54, 56, 91, MC4, and MC6. 2/ Runoff data furnished by U. S. Geological Survey, New Philadelphia, Ohio. 3/ Precipitation and runoff records began Oct. 1936. All monthly amounts included in averages. 4/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT							COSHOCTON, OHIO							WATERSHED 994 26.37		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of March 9 and 10, 1964																
	6 RG 5/			RG	27											
2 -7	.00	.0150	3 -9	2005	.00	.00	3 -9	2100	.0832	.0000						
2 -8	.00	.0089		2045	.18	.12		2300	.1026	.1858						
2 -9	.04S	.0064		2125	.14	.21	3-10	0200	.1642	.5860						
2-10	.00	.0056		2305	.17	.50		0400	.1847	.9349						
2-11	.00	.0059		2345	.24	.66		0500	.1785	1.1165						
2-12	.00	.0033		2400	.12	.69		0700	.1282	1.4232						
2-13	.09S	.0038	3-10	0033	.05	.72		1100	.0661	1.8118						
2-14	.00	.0041		0050	.32	.81		1600	.0364	2.0681						
2-15	.18S	.0037		0105	.16	.85		2000	.0255	2.1919						
2-16	.12S	.0041		0115	.30	.90		2400	.0182	2.2793						
2-17	.00	.0037		0205	.24	1.10	3-11	0700	.0125	2.3867						
2-18	.56S	.0037		0225	.45	1.25		1300	.0100	2.4542						
2-19	.41S	.0041		0325	.05	1.30		1900	.0087	2.5103						
2-20	.06S	.0045		0605	.02	1.35		2400	.0075	2.5508						
2-21	.00	.0038		0825	.01	1.37										
2-22	.00	.0031		0905	.04	1.40										
2-23	.00	.0026		0958	.03	1.43										
2-24	TS	.0031		1005	.17	1.45										
2-25	.00	.0034		1305	.01	1.47										
2-26	.12S	.0038														
2-27	.00	.0037														
2-28	.00	.0031														
2-29	.00	.0034														
3 -1	.00	.0059														
3 -2	.00	.0287														
3 -3	.00	.0903														
3 -4	2.00	.4391														
3 -5	.15	.6977														
3 -6	.00	.1081														
3 -7	.00	.0711														
3 -8	.10	.0588														
3 -9	6/2.35	7/.8686														
Watershed conditions: 14% in small grain crops, mostly wheat, 29% in meadow, 27% in pasture, 22% in woodland, 5% in idle land, and 3% in miscellaneous cover (farmsteads and roads). All vegetation in dormant state.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 17545. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 26.37-5. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.37-1 AND 26.37-2. 5/ ARITHMETIC AVERAGE RAIN GAGES 27, 54, 56, 91, MC4, AND MC6. 6/ RAINFALL PRIOR TO 2005. 7/ RUNOFF PRIOR TO 2100. 8/ NORMAL BASE FLOW.																

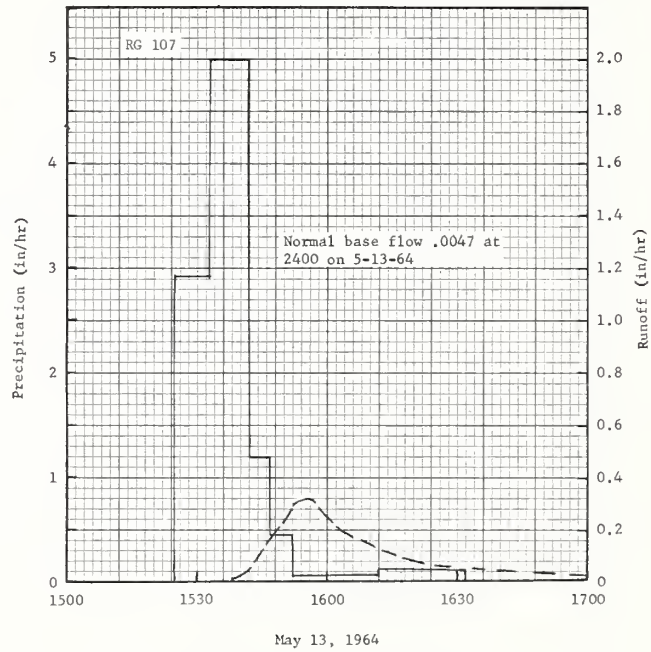
Cooperative Research Project of USDA, U. S. Geological Survey, and Ohio Agricultural Experiment Station



COSHOOTON, OHIO WATERSHED 994

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCOTON, OHIO				AREA — 52.8 ACRES				WATERSHED 174		26.38	
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964 P 1/ Q	2.75 .09	1.94 .01	7.31 4.50	5.74 2.62	3.63 .55	3.52 .13	2.44 T	3.79 .09	.59 .00	.80 .00	1.91 .00	4.36 .60	38.78 8.59				
STA AV 2/P (60-64) Q	2.07 .43	2.57 .97	4.94 3.32	4.00 2.03	2.54 .24	3.65 .49	3.07 .08	3.11 .10	1.60 .02	1.45 .01	2.27 .13	2.38 .20	33.65 8.02				
MEAN P 3/ 54 YR	3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	5-13	.32	3-10	.18	3-10	.32	3-9	.86	3-9	1.36	3-9	1.99	3-9	2.54	3-4	3.71	
MAXIMUMS FOR PERIOD OF RECORD																	
19 61 to 19 64	4-25 1961	1.03	4-25 1961	.82	4-25 1961	1.11	4-25 1961	1.33	3-4 1963	1.61	3-9 1964	1.99	3-9 1964	2.54	3-4 1964	3.71	
NOTES: Watershed conditions: Cover of 15% hardwoods, 2% reforested, 67% grassland, 16% miscellaneous, prevailing practice on 86% area. 1/ Rain gage 107. 2/ Precipitation and runoff records began June 1960. All monthly amounts included in averages. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																	
1964 SELECTED RUNOFF EVENT						COSHOCOTON, OHIO				WATERSHED 174				26.38			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of May 13, 1964																	
	RG 107			RG	107												
4-13	.10	.014	5-13	1525	.00	.00	5-13	1530	.0069	.000							
4-14	.00	.011		1533	2.92	.39		1538	.0170	.002							
4-15	.00	.009		1542	5.00	1.14		1540	.0270	.002							
4-16	.00	.007		1547	1.20	1.24		1542	.0406	.003							
4-17	.00	.006		1552	.48	1.28		1543	.0727	.004							
4-18	.30	.011		1612	.06	1.30		1544	.1061	.006							
4-19	.47	.046		1632	.12	1.34		1546	.1489	.010							
4-20	1.47	.669						1548	.1840	.016							
4-21	.17	.201						1550	.2329	.023							
4-22	.22	.162						1552	.3024	.032							
4-23	.00	.061						1556	.3230	.052							
4-24	.00	.040						1558	.2817	.062							
4-25	.00	.027						1600	.2517	.071							
4-26	.00	.018						1604	.1916	.086							
4-27	.62	.072						1610	.1489	.103							
4-28	.00	.041						1614	.1166	.112							
4-29	.10	.032						1620	.0911	.122							
4-30	.28	.050						1626	.0727	.131							
5 -1	.00	.026						1640	.0515	.145							
5 -2	.00	.018						1650	.0406	.153							
5 -3	.00	.012						1700	.0332	.159							
5 -4	.00	.010						1730	.0207	.172							
5 -5	.00	.009						1750	.0170	.179							
5 -6	.00	.007						1900	.0097	.194							
5 -7	.00	.005						2100	.0064	.210							
5 -8	.00	.004						2200	.0069	.217							
5 -9	.00	.004						2400	6/.0047	.228							
5-10	.00	.003															
5-11	.00	.003															
5-12	.50	.009															
5-13	4/.11	5/.008															
Watershed conditions: 43% in meadow vegetation 12" high; 22% in woods, growth to 70' high; 20% in wheat, 12" high; 12% in pasture, grass and weeds 5" high, 3% in miscellaneous cover (roads, etc.).																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 53.240. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 26.30-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.38-1, AND 26.30-3. 4/ RAINFALL PRIOR TO 1002. 5/ RUNOFF PRIOR TO 1530. 6/ NORMAL BASE FLOW.																	

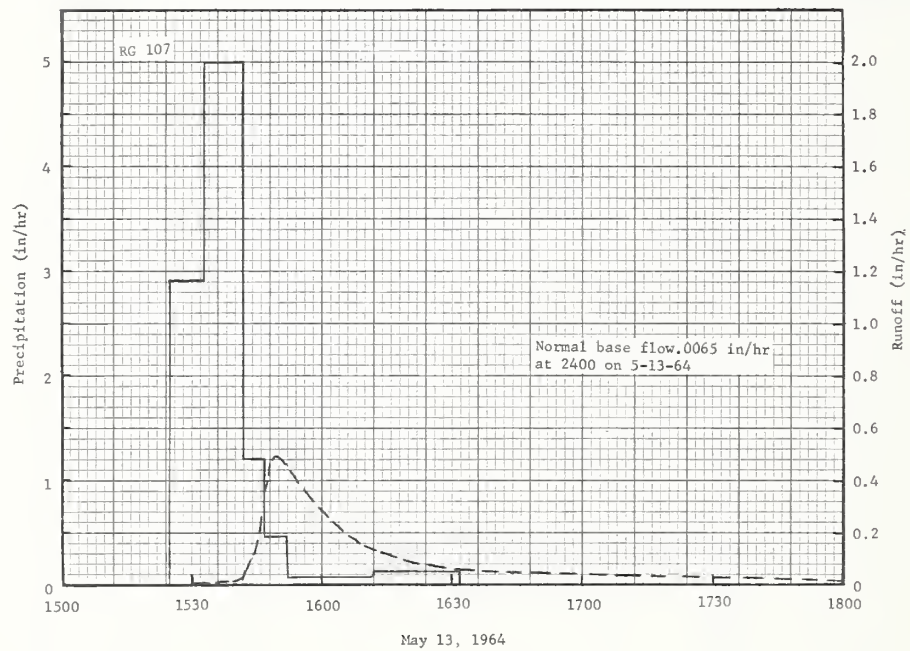
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COSHOCTON, OHIO WATERSHED 174

MONTHLY PRECIPITATION AND RUNOFF (inches)						COSHOCTON, OHIO		WATERSHED 194		26.39						
						AREA — 187 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/ Q	2.75- .25	1.94 .06	7.31 5.36	5.74 3.75	3.63 1.40	3.52 .37	2.44 .16	3.79 .19	.59 .02	.80 .03	1.91 .04	4.36 .63	38.78 12.26		
STA AV 2/P (60-64) Q		2.23 1.06	2.69 1.40	4.15 3.98	3.50 2.63	2.63 .85	3.65 .76	3.07 .21	3.11 .16	1.60 .07	1.45 .07	2.27 .22	2.38 .36	32.73 11.77		
MEAN P 3/ 54 YR		3.30	2.62	3.45	3.72	3.84	4.39	4.22	3.78	3.15	2.61	2.87	2.85	40.80		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-13	.50	5-13	.18	3-10	.32	3-9	.84	3-9	1.32	3-9	1.91	3-9	2.60	3-4	3.89
MAXIMUMS FOR PERIOD OF RECORD																
19 60 TO 19 64	4-25 1961	.87	4-25 1961	.68	4-25 1961	.93	4-25 1961	1.12	3-9 1964	1.32	3-9 1964	1.91	3-9 1964	2.60	3-4 1964	3.89
NOTES: Watershed conditions: Cover of 21% hardwoods, 2% reforested, 58% grassland, 11% cultivated, 8% miscellaneous, prevailing practice. 1/ Rain gage 107. 2/ Precipitation and runoff records began Jan. 1960. 3/ Mean P based on 54-yr (1909-62) U. S. Weather Bureau record period at Coshocton, Ohio.																
1964 SELECTED RUNOFF EVENT						COSHOCTON, OHIO		WATERSHED 194		26.39						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE	RAINFALL	RUNOFF	DATE	TIME	INTENSITY	ACC.	DATE	TIME	RATE	ACC.						
MO-DAY	(inches)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)	MO-DAY	OF DAY	(in/hr)	(inches)						
Event of May 13, 1964																
	RG 107			RG	107											
4-13	.10	.0445	5-13	1525	.00	.00	5-13	1530	.0065	.0000						
4-14	.00	.0391		1533	2.92	.39		1540	.0119	.0015						
4-15	.00	.0329		1542	5.00	1.14		1542	.0254	.0021						
4-16	.00	.0309		1547	1.20	1.24		1543	.0721	.0029						
4-17	.00	.0274		1552	.48	1.28		1544	.1018	.0044						
4-18	.30	.0326		1612	.06	1.30		1545	.1442	.0064						
4-19	.47	.0850		1632	.12	1.34		1546	.2105	.0094						
4-20	1.47	.6418						1547	.3664	.0142						
4-21	.17	.2503						1548	.4598	.0211						
4-22	.22	.2077						1550	.4974	.0371						
4-23	.00	.1200						1552	.4598	.0530						
4-24	.00	.0877						1554	.4089	.0675						
4-25	.00	.0688						1556	.3760	.0806						
4-26	.00	.0566						1558	.3256	.0923						
4-27	.62	.1347						1600	.2880	.1025						
4-28	.00	.0879						1604	.2264	.1196						
4-29	.10	.0720						1608	.1819	.1332						
4-30	.28	.0984						1610	.1570	.1389						
5-1	.00	.0681						1614	.1273	.1484						
5-2	.00	.0546						1620	.0970	.1596						
5-3	.00	.0486						1628	.0721	.1709						
5-4	.00	.0433						1640	.0546	.1835						
5-5	.00	.0410						1650	.0440	.1917						
5-6	.00	.0368						1710	.0335	.2047						
5-7	.00	.0349						1740	.0244	.2191						
5-8	.00	.0329						1820	.0183	.2334						
5-9	.00	.0291						1910	.0144	.2470						
5-10	.00	.0274						2000	.0119	.2580						
5-11	.00	.0274						2200	.0088	.2787						
5-12	.50	.0373						2400	6/.0065	.2939						
5-13	4/.11	5/.0239														
watershed conditions: 24% in woods and reforested; 27% in pasture, grass and weeds 5" high; 9% in corn, area planted and bare; 5% in wheat, 12" high; 30% in meadow, vegetation 11" high; 5% in miscellaneous (farmsteads, roads, etc.).																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 188.56. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 26.30-4. FOR GEOLOGY DESCRIPTION AND MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070 PP. 26.39-1, AND 26.30-3. 4/ RAINFALL PRIOR TO 1002. 5/ RUNOFF PRIOR TO 1530. 6/ NORMAL BASE FLOW.																

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COSHOCTON, OHIO WATERSHED 194

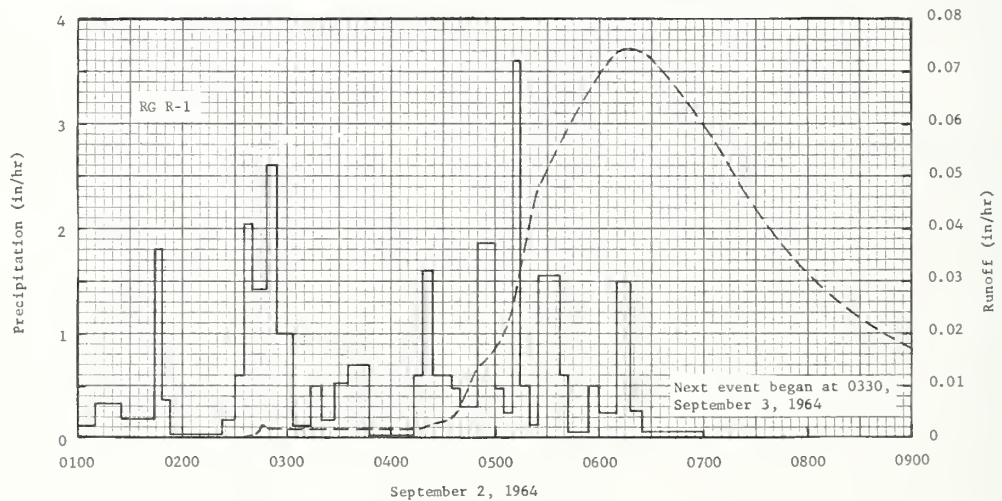
MONTHLY PRECIPITATION AND RUNOFF (inches)						COLBY, WISCONSIN				WATERSHED W-1				29.01		
						AREA — 345 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P <u>1</u> / Q <u>2</u> / STA AV <u>3</u> / (49-64) Q	.53 nr	.06 nr	.95 nr	3.31 .09	2.62 .13	2.16 .00	3.08 .01	2.59 .00	9.21 1.21	.31 .00	2.40 .08	1.39 nr	28.61 1.52			
MEAN P <u>4</u> / 75 YR	1.04	1.11	1.75	2.58	3.98	4.87	3.41	3.71	3.86	2.51	1.72	1.21	31.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	9- 2	.07	9- 2	.07	9- 2	.13	9- 2	.21	9- 2	.23	9- 2	.24	9-22	.34	9-20	.63
MAXIMUMS FOR PERIOD OF RECORD																
1949 TO 19 64	6- 4 1958	.57	6- 4 1958	.45	6- 4 1958	.59	6- 4 1958	1.10	6- 4 1958	1.21	6- 4 1958	1.25	5- 9 1960	1.51	5- 4 1960	3.63
Notes: Watershed conditions: 13% permanent pasture, 11% ungrazed woods, 3% roads and building sites, 73%—3-yr. rotation of corn, small grain, hay. <u>1</u> / Precipitation is arithmetic average of 3 recording rain gages. <u>2</u> / Runoff station not in operation during months shown as nr. <u>3</u> / Precipitation and runoff records began May 1949. <u>4</u> / Mean P based on 75-yr. (1890-1964) U.S. Weather Bureau record period at Neillsville, Wis.																
1964 SELECTED RUNOFF EVENT						COLBY, WISCONSIN				WATERSHED W-1				29.01		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of September 2, 1964																
8- 2	3 RG <u>5</u> / .04	.0000	9-2	RG 0100	R-1 .00	.00	9-2	0235	.0000	.0000						
8-10	.14	.0000		0110	.12	.02		0243	.0007	.0000						
8-16	.04	.0000		0125	.32	.10		0246	.0025	.0001						
8-20	.03	.0000		0144	.19	.16		0250	.0015	.0003						
8-21	.46	.0000		0148	1.80	.28		0255	.0019	.0004						
8-22	1.06	.0000		0153	.36	.31		0300	.0019	.0006						
8-24	.28	.0000		0223	.02	.32		0310	.0019	.0009						
8-28	.05	.0000		0230	.17	.34		0340	.0017	.0018						
8-29	.48	.0000		0235	.60	.39		0400	.0015	.0023						
9- 1	.18	.0000		0240	2.04	.56		0410	.0018	.0026						
9- 2	<u>6</u> / .03	.0000		0248	1.42	.75		0420	.0020	.0029						
				0254	2.60	1.01		0425	.0027	.0031						
				0303	1.00	1.16		0430	.0030	.0033						
				0314	.11	1.18		0435	.0039	.0036						
				0320	.50	1.23		0440	.0062	.0040						
Watershed conditions: 13% permanent pasture, 11% ungrazed woods, 3% roads and building sites, 73% in 3-yr. rotation of corn, small grain, hay.																
				0327	.17	1.25		0445	.0096	.0047						
				0335	.52	1.32		0450	.0136	.0057						
				0347	.70	1.46		0455	.0152	.0069						
				0413	.02	1.47		0500	.0173	.0082						
				0418	.60	1.52		0505	.0202	.0098						
				0424	1.60	1.68		0510	.0253	.0117						
				0435	.60	1.79		0515	.0333	.0141						
				0440	.48	1.83		0520	.0411	.0172						
				0450	.30	1.88		0525	.0482	.0209						
				0500	1.86	2.19		0530	.0512	.0251						
				0505	.48	2.23		0540	.0581	.0342						
				0510	.24	2.25		0550	.0639	.0444						
				0514	3.60	2.49		0600	.0699	.0555						
				0520	.50	2.54		0614	.0741	.0723						
				0525	.12	2.55		0624	.0739	.0846						
				0537	1.55	2.86		0634	.0709	.0967						
				0542	.60	2.91		0650	.0642	.1147						
				0554	.05	2.92		0710	.0544	.1345						
				0600	.50	2.97		0730	.0438	.1508						
				0610	.24	3.01		0750	.0351	.1640						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 347.864. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 29.1-5. <u>5</u> / ARITHMETIC AVERAGE OF RAIN GAGES R-1, R-2 AND R-3. <u>6</u> / RAINFALL FROM 0010 TO 0030.																

Cooperative Research Project of USDA, Wisconsin Valley Improvement Company,
and Wisconsin Agricultural Experiment Station

1964 SELECTED RUNOFF EVENT			COLBY, WISCONSIN				WATERSHED W-1				29.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of September 2, 1964 - Continued											
			9-2	RG	R-1	3.21	9-2	0810	.0290	.1747	
				0618	1.50	3.24		0830	.0230	.1833	
				0625	.26	3.27		0900	.0173	.1934	
				0700	.05			0930	.0126	.2009	
				RG	R-2	3.75		1000	.0100	.2066	
				RG	R-3	3.20					
				3 RG	AVG 1/	3.41		1025	.0080	.2103	
								1105	.0063	.2151	
								1150	.0043	.2190	
								1240	.0041	.2225	
								1340	.0031	.2261	
								1440	.0023	.2288	
								1540	.0018	.2309	
								1715	.0014	.2335	
								1830	.0011	.2350	
								1945	.0008	.2361	
								2130	.0005	.2373	
								2400	.0003	.2383	
							9-3	0300	.0002	.2392	
								0330	2/.0002	.2393	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 347.864. 1/ ARITHMETIC AVERAGE OF RAIN GAGES R-1, R-2, AND R-3. 2/ BEGINNING OF NEXT EVENT.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 347.864. 1/ ARITHMETIC AVERAGE OF RAIN GAGES R-1, R-2, AND R-3. 2/ BEGINNING OF NEXT EVENT.



COLBY, WISCONSIN WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						FENNIMORE, WISCONSIN WATERSHED W-1 AREA — 330 ACRES							31.01
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 P ¹ / Q	.33 .08	.13 .06	1.06 ² / .09	4.19 .21	5.51 .08	1.60 .02	6.43 .17	4.92 .04	2.53 .03	.10 .03	1.03 .01	.58 T	28.41 .82
STA AV ³ /P (38-64)Q	.86 .34	.92 .43	1.84 .85	3.05 .29	3.79 .29	4.78 .46	4.18 .42	3.89 .36	3.54 .26	2.25 .24	2.05 .22	1.05 .21	32.20 4.37
MEAN P ⁴ / 74 YR	1.11	1.12	2.01	2.99	4.00	4.42	3.78	3.46	3.79	2.35	1.99	1.28	32.30

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-27	.13	7-27	.10	7-27	.13	7-27	.14	7-27	.14	7-27	.15	7-27	.15	4-2	.17

MAXIMUMS FOR PERIOD OF RECORD

19 38 to 19 64	8- 6 1951	1.69	8- 6 1951	1.13	8- 6 1951	1.53	7-15 1950	2.61	7-15 1950	2.69	7-15 1950	2.69	7-15 1950	2.69	7-15 1950	2.86
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Notes: Watershed conditions: 21.9% corn; 10.4% small grain; 20.7% hay; 31.8% pasture; 6.5% idle; 8.7% roads and buildings. 1/ Precipitation is arithmetic average of 9 recording gages. 2/ Snow water equivalent on Mar. 26 was .50 in. and had completely melted by Apr. 3. 3/ Precipitation records began June 1938. Runoff records began July 1938. 4/ Mean P based on 74-yr. (1891-1964) U.S. Weather Bureau record period at Lancaster, Wis.

1964 DAILY AIR TEMPERATURE (degrees F)												FENNIMORE, WISCONSIN							WATERSHED W-1							31.01	
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC				
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN			
1	32	5	40	21	54	31	44	19	52	46	66	38	85	64	92	70	75	55	72	48	63	49	20	12			
2	40	25	32	20	66	32	42	33	72	51	62	44	86	64	92	76	85	58	64	44	64	48	22	18			
3	38	31	37	16	48	34	40	23	76	54	70	42	81	60	87	76	85	66	70	42	73	56	22	14			
4	38	20	48	22	48	28	42	19	80	60	75	42	80	52	87	62	71	52	51	36	58	44	21	6			
5	38	23	51	26	34	19	38	31	80	62	75	46	77	53	85	63	74	49	52	30	52	35	20	4			
6	30	20	35	21	44	22	55	38	79	57	67	46	85	64	76	58	73	56	49	32	51	35	20	2			
7	34	18	21	10	34	17	39	28	80	49	79	56	85	66	79	56	85	60	65	27	64	44	26	20			
8	32	28	29	5	29	25	43	27	78	53	86	60	88	63	73	52	79	67	43	26	64	44	30	12			
9	30	-1	31	11	34	23	58	26	60	49	87	61	79	61	65	50	85	69	46	27	64	45	29	13			
10	11	4	31	15	38	14	63	32	71	45	72	52	81	59	82	57	74	56	49	20	62	40	36	28			
11	14	9	38	12	39	22	66	44	76	50	65	49	72	60	74	55	59	44	52	26	70	54	36	33			
12	14	7	34	27	47	26	62	43	69	52	80	59	68	52	61	52	60	41	60	42	65	45	36	30			
13	19	0	33	16	51	30	59	42	62	47	81	60	72	49	66	47	66	39	61	40	60	37	31	19			
14	17	4	36	10	46	28	53	34	68	41	76	57	81	58	75	43	68	51	68	44	66	39	28	1			
15	31	4	32	20	50	27	64	30	77	52	71	58	88	59	78	47	60	44	71	46	62	47	25	-2			
16	26	10	34	10	49	23	84	44	77	59	68	46	88	68	81	62	68	41	75	47	47	29	30	-2			
17	36	18	44	23	29	9	70	42	74	53	77	52	92	69	80	61	72	49	72	51	46	28	2	-10			
18	39	20	45	22	37	8	52	38	85	59	85	68	85	70	79	55	62	57	54	33	35	23	14	-8			
19	34	27	32	25	39	24	53	34	80	58	88	64	95	69	80	56	71	56	45	28	30	12	17	6			
20	39	24	27	15	29	25	56	40	79	45	83	64	87	70	80	61	73	56	51	28	26	5	24	8			
21	46	25	25	9	34	21	68	43	85	44	81	64	90	70	79	62	64	60	52	31	9	-2	33	13			
22	46	32	36	10	39	17	61	40	86	64	74	64	95	67	69	59	70	52	49	27	34	6	34	13			
23	40	27	30	0	51	27	60	38	82	63	73	59	90	66	64	54	60	46	50	29	43	28	35	33			
24	37	17	32	0	36	23	64	32	71	56	77	55	93	67	74	52	54	40	64	30	45	28	33	6			
25	23	7	33	10	28	16	65	32	74	52	85	61	87	58	68	49	68	39	71	47	51	29	14	6			
26	23	10	22	2	23	6	73	41	77	61	87	65	90	59	73	46	62	44	71	46	37	17	16	0			
27	16	-2	34	0	30	3	68	52	66	45	88	65	92	64	80	61	50	33	60	46	34	20	22	-3			
28	21	-5	42	12	22	8	60	44	64	45	88	63	89	63	77	58	60	31	61	36	32	4	30	11			
29	40	15	53	26	22	10	50	44	70	38	90	65	78	59	81	53	68	36	49	31	12	2	35	30			
30	41	27	---	---	25	6	54	44	70	45	88	66	67	60	73	57	65	44	61	31	13	-2	33	16			
31	46	30	---	---	33	20	---	---	66	44	---	---	76	58	75	54	---	---	63	40	---	---	31	12			
AV.	31	15	35	14	38	20	57	36	74	51	78	56	84	62	77	57	69	50	59	36	48	30	26	11			
MEAN	23.2	9	24.7	29.2	46.4	62.4	67.3	73.1	66.8	59.3	47.3	38.7	18.5														
STA AV	24	9	28	12	37	21	55	34	67	46	76	56	81	59	79	58	71	49	61	40	42	26	28	13			

NOTES: TEMPERATURE DATA TAKEN FROM HYGROTHERMOGRAPH CHECKED WEEKLY WITH MAXIMUM AND MINIMUM THERMOMETERS. STATION AVERAGE IS AVERAGE FOR 25-YR PERIOD (1940-64).

1964	DAILY PRECIPITATION (inches)					FENNIMORE, WISCONSIN					WATERSHED W-1		31.01
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.00	.00	.23	.00	.30	.00	.00	.00	.12	.06	
2	.00	.00	.00	1.38	.42	.30	.00	.00	.00	.02	.09	.00	
3	.00	.00	.06	.03	.00	.00	.00	.00	.84	.00	.00	.00	
4	.00	.00	.00	.00	.72	.00	.00	.00	.00	.06	.08	.00	
5	.00	.00	.00	1.18	T	.00	.00	.00	.00	.00	.00	.00	
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	
7	.00	.00	.00	.00	.26	.00	.00	.00	.00	.00	.00	.00	
8	.19	.00	.35	.00	.12	.00	1.27	.00	.90	.00	.00	.00	
9	.00	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00	
10	.00	.00	.00	.00	.00	.00	.00	.04	.13	.00	.00	.09	
11	.01	.00	.00	.00	.00	.23	.08	.33	.00	.02	.00	.10	
12	.00	.13	.00	.01	1.32	.23	.00	.00	.00	.00	.07	.00	
13	.00	.00	.11	.18	.24	.00	.00	.00	.00	.00	.00	.00	
14	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00	.00	
15	.00	.00	.00	.00	.29	.00	.00	.00	.00	.00	.37	.00	
16	.00	.00	.00	.00	.64	.00	.00	T	.00	.00	.00	.00	
17	.00	.00	.00	.05	.00	.05	.00	.00	.06	.00	.00	.00	
18	.00	.00	.00	.00	.00	.00	.00	.04	.17	.00	.00	.00	
19	.05	.00	.03	.00	.00	.00	.00	.00	.03	.00	.00	.00	
20	.00	.00	.19	.05	.00	.00	.11	3.08	.15	.00	.16	.00	
21	.00	.00	.00	.11	.00	.04	.50	.08	.13	.00	.00	.00	
22	.00	.00	.00	.00	.00	.67	.00	.00	.09	.00	.00	.00	
23	.00	.00	.00	.00	.72	.00	.00	.00	.00	.00	.00	.02	
24	.08	.00	.00	.00	.55	.00	.00	.05	.00	.00	.00	.00	
25	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.00	.16	
26	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	
27	.00	.00	.12	.82	.00	.00	3.53	.00	.00	.00	.12	.00	
28	.00	.00	.00	.00	.00	.00	.47	.00	.00	.00	.00	.10	
29	.00	.00	.04	.32	.00	.00	.00	1.08	.00	.00	.00	.05	
30	.00	.00	.00	.06	.00	.00	.00	.10	.00	.00	.00	.00	
31	.00	.00	.00	.00	.00	.00	.17	.00	.00	.00	.00	.00	
TOTAL	.33	.13	1.06	4.19	5.51	1.60	6.43	4.92	2.53	.10	1.03	.58	
STA AV	.86	.92	1.84	3.05	3.79	4.78	4.21	3.86	3.27	2.29	2.02	1.06	

NOTES: PRECIPITATION VALUES, APR. 12 TO NOV. 15 ARE ARITHMETIC AVERAGE OF 9 RECORDING GAGES. REST OF YEAR ARITHMETIC AVERAGE OF RAIN GAGES R-1, R-6 AND R-8. ALL PRECIPITATION DEC., JAN., FEB., AND MAR. WAS SNOW. STA AV IS 26-YR AVERAGE (1939-64).

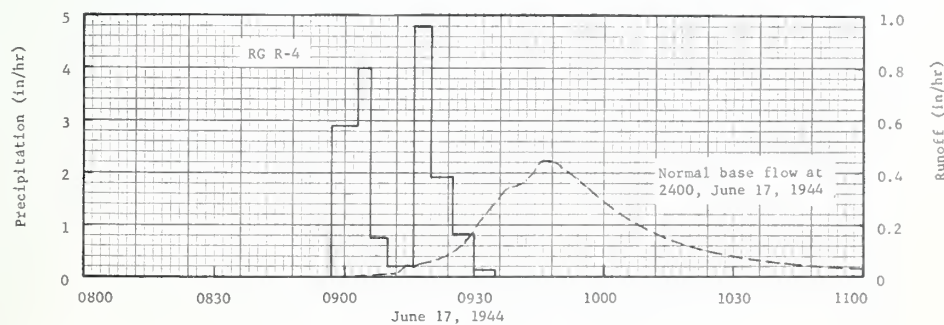
1964	MEAN DAILY DISCHARGE (cfs)					FENNIMORE, WISCONSIN					WATERSHED W-1		31.01
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.037	.036	.026	.022	.035	.012	.003	.006	.006	.006	.004	.003	
2	.035	.042	.029	1.891	.073	.017	.004	.004	.006	.007	.006	.003	
3	.033	.049	.029	.086	.022	.015	.007	.004	.047	.010	.006	.001	
4	.032	.044	.029	.073	.032	.012	.004	.004	.019	.012	.006	.001	
5	.030	.042	.029	.080	.054	.010	.004	.004	.010	.022	.004	.001	
6	.029	.037	.029	.087	.021	.010	.004	.004	.017	.025	.004	.000	
7	.029	.035	.029	.062	.019	.010	.004	.004	.018	.017	.004	.000	
8	.029	.030	.029	.036	.029	.012	.069	.004	.062	.008	.006	.000	
9	.029	.026	.029	.033	.015	.012	.022	.004	.012	.006	.006	.000	
10	.029	.022	.029	.029	.015	.010	.008	.004	.012	.006	.006	.000	
11	.029	.022	.029	.029	.012	.014	.010	.008	.008	.008	.006	.000	
12	.029	.024	.152	.025	.119	.017	.010	.006	.008	.010	.006	.001	
13	.029	.025	.151	.053	.091	.012	.010	.004	.010	.010	.006	.001	
14	.029	.026	.080	.025	.026	.018	.008	.003	.008	.008	.003	.001	
15	.029	.028	.054	.022	.025	.017	.006	.001	.006	.006	.010	.001	
16	.029	.029	.037	.022	.148	.010	.003	.001	.006	.008	.004	.000	
17	.029	.029	.036	.022	.025	.010	.001	.001	.006	.012	.004	.000	
18	.029	.029	.035	.025	.018	.010	.001	.001	.008	.015	.004	.000	
19	.029	.029	.033	.028	.015	.008	.001	.001	.006	.018	.004	.000	
20	.029	.029	.032	.029	.018	.006	.001	.227	.010	.017	.004	.000	
21	.030	.029	.030	.026	.018	.006	.028	.147	.012	.007	.004	.000	
22	.139	.029	.029	.022	.012	.015	.008	.010	.006	.003	.004	.000	
23	.069	.029	.029	.010	.010	.015	.006	.008	.017	.003	.004	.000	
24	.049	.029	.029	.012	.115	.012	.003	.008	.018	.007	.004	.000	
25	.035	.028	.028	.018	.018	.012	.001	.007	.012	.017	.004	.000	
26	.032	.026	.028	.026	.015	.010	.000	.004	.012	.030	.004	.000	
27	.029	.025	.026	.039	.012	.008	1.986	.004	.022	.024	.004	.000	
28	.029	.024	.025	.040	.010	.006	.062	.004	.033	.010	.004	.000	
29	.029	.022	.024	.039	.010	.006	.018	.042	.033	.008	.004	.000	
30	.029	.022	.022	.025	.010	.006	.008	.075	.018	.006	.004	.000	
31	.029	.022	.022	.010	.010	.006	.006	.006	.006	.006	.006	.000	
MEAN	.036	.030	.039	.098	.034	.011	.074	.020	.016	.011	.005	.000	
INCHES	.079	.063	.088	.212	.076	.024	.166	.044	.034	.025	.010	.001	

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .07213. RECORDS ARE EXCELLENT. SOME PERIODS IN WINTER PARTIALLY ESTIMATED BECAUSE OF ICE IN STILLING WELL.

1944 SELECTED RUNOFF EVENT			FENNIMORE, WISCONSIN				WATERSHED W-1		31.04	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			Event of June 17, 1944							
5-17	9 RG 1/	.00	6-17	RG	R-4		6-17			
5-18	.23	.0157		0857	.00	.00		0902	.0010	.0000
5-19	.66	.0173		0903	2.90	.29		0912	.0108	.0009
5-20	.26	.0157		0906	4.00	.49		0914	.0414	.0017
5-21	.15	.0157		0910	.75	.54		0915	.0432	.0024
				0916	.20	.56	0916	.0363	.0031	
5-22	.00	.0157		0920	4.80	.88	0918	.0484	.0045	
5-23	.44	.0203		0925	1.92	1.04	0922	.0714	.0085	
5-24	.33	.0157		0930	.84	1.11	0926	.1062	.0144	
5-25--29	.00	.0785		0935	.12	1.12	0928	.1306	.0183	
5-30	.08	.0157					0929	.1512	.0206	
5-31	.05	.0157		RG	R-1	1.00	0930	.1737	.0233	
6- 1	.88	.0233		RG	R-2	.97	0931	.2030	.0264	
6-2--4	.00	.0471		RG	R-3	1.00	0936	.3090	.0473	
6- 5	.21	.0157		RG	R-5	.97	0937	.3270	.0526	
6-6--7	.00	.0314		RG	R-6	1.11	0940	.3540	.0698	
6- 8	.36	.0183		RG	R-7	1.16	0942	.3720	.0819	
6- 9	.44	.0169		RG	R-8	1.10	0944	.4070	.0949	
6-10	.00	.0157		RG	R-9	1.00	0945	.4380	.1019	
6-11	.13	.0157					0946	.4450	.1093	
6-12	1.81	.0691	9 RG	AVG 1/	1.05		0947	.4410	.1167	
6-13	.44	.0417					0948	.4410	.1240	
6-14	.00	.0223					0949	.4380	.1313	
6-15	.75	.0340					0950	.4200	.1385	
6-16	.00	.0147					0954	.3750	.1651	
6-17	2/ .32	3/ .0171					1000	.2890	.1983	
Watershed conditions: 31.9% of area was in corn, 3-4 in.; 18.1% in small grain; 24.6% in hay; 19.9% in pasture; and 5.5% in roads and buildings.							1006	.2215	.2236	
							1012	.1710	.2432	
							1018	.1306	.2582	
							1024	.1014	.2697	
							1030	.0790	.2787	
							1036	.0645	.2859	
							1048	.0439	.2966	
							1100	.0322	.3040	
							1120	.0185	.3121	
							1140	.0117	.3171	
							1200	.0074	.3203	
							1300	.0033	.3255	
							1400	.0020	.3280	
							1800	.0014	.3344	
							2400	4/ .0013	.3422	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 332.750. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 9. 2/ RAINFALL FROM 0405 TO 0430. 3/ RUNOFF TO 0902. 4/ NORMAL BASE FLOW.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 332.750. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 9. 2/ RAINFALL FROM 0405 TO 0430. 3/ RUNOFF TO 0902. 4/ NORMAL BASE FLOW.

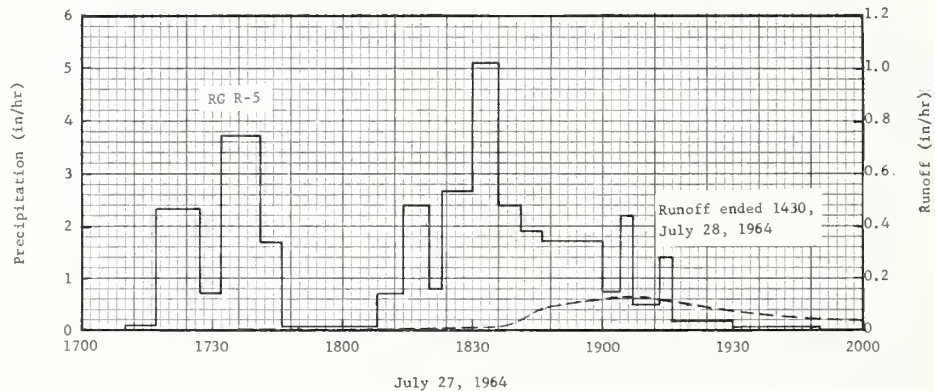


FENNIMORE, WISCONSIN WATERSHED W-1

1964 SELECTED RUNOFF EVENT			FENNIMORE, WISCONSIN				WATERSHED W-1		31.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
			Event of July 27, 1964						
			9 RG 1/						
6-27	.00	.0006	7-27	RG	R-5	.00	7-27	1736	.0000
6-28--30	.00	.0012		1710	.00	.00		1818	.0068
7- 1	.30	.0002		1717	.08	.01		1836	.0152
7- 2	.00	.0003		1727	2.34	.40		1839	.0203
7- 3	.00	.0005		1732	.72	.46		1847	.0839
				1741	3.73	1.02			.0134
7-4--7	.00	.0012		1746	1.68	1.16		1900	.1172
7- 8	1.27	.0050		1808	.06	1.18		1906	.1302
7- 9	.00	.0016		1814	.70	1.25		1914	.1193
7-10	.00	.0006		1820	2.40	1.49		1921	.0998
7-11	.08	.0007		1823	.80	1.53		1930	.0746
									.0910
7-12--13	.00	.0014		1830	2.66	1.84		1940	.0670
7-14	.00	.0006		1836	5.10	2.35		2000	.0376
7-15	.00	.0004		1841	2.40	2.55		2005	.0319
7-16	.00	.0002		1846	1.92	2.71		2010	.0265
7-17--19	.00	.0003		1900	1.71	3.11		2020	.0195
									.1293
7-20	.11	.0001		1904	.75	3.16		2027	.0165
7-21	.50	.0020		1907	2.20	3.27		2040	.0114
7-22	.00	.0006		1913	.50	3.32		2100	.0068
7-23	.00	.0004		1916	1.40	3.39		2200	.0020
7-24	.00	.0002		1930	.17	3.43		2300	.0008
									.1427
7-25	.00	.0001		1950	.06	3.45		2400	.0004
7-26	.00	.0000					7-28	0320	.0001
								1430	.0000
				RG	R-1	3.32			.1433
				RG	R-2	3.24			.1442
				RG	R-3	3.44			.1450
				RG	R-4	3.73			
				RG	R-6	3.69			
				RG	R-7	3.68			
				RG	R-8	3.83			
				RG	R-9	3.39			
				9 RG	AVG 1/	3.53			

Watershed conditions: 21.9% corn, 10.4% small grain, 20.7% hay, 31.8% pasture, 6.5% idle, 8.7% roads and buildings.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 332.750. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 9.



FENNIMORE, WISCONSIN WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						FENNIMORE, WISCONSIN WATERSHED W-2 AREA—22.8 ACRES								31.02
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1964 P ¹ / Q	.28 .10	.13 .00	.93 ² / T	4.17 .12	5.74 .00	1.56 .00	6.66 .37	4.84 T	2.52 .00	.11 .00	.95 .00	.57 .01	28.46 .60	
STA AV ³ /P (38-64) Q	.85 .16	.91 .27	1.80 .72	3.07 .04	3.85 .01	4.86 .13	4.25 .13	3.88 .09	3.54 .02	2.26 T	2.06 .00	1.03 .01	32.36 1.58	
MEAN P ⁴ / 74 YR	1.11	1.12	2.01	2.99	4.00	4.42	3.78	3.46	3.79	2.35	1.99	1.28	32.30	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	9-16	.28	9-16	.07	9-16	.07	3-26	.08	3-26	.10	3-26	.11	3-26	.20	3-26	.22

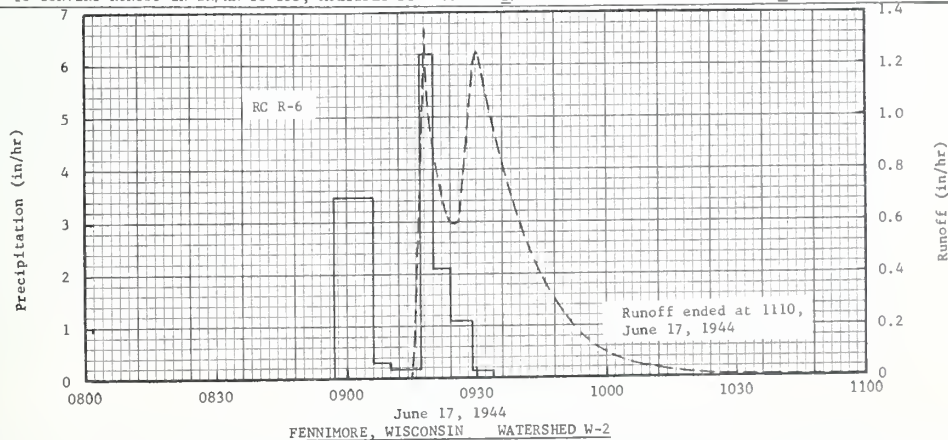
MAXIMUMS FOR PERIOD OF RECORD

1938 to 1964	6-28 1945	2.68	8-6 1951	1.39	8-6 1951	1.72	7-15 1950	2.25	7-15 1950	2.26	7-15 1950	2.26	7-15 1950	2.26	3-24 1959	3.77
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Notes: Watershed conditions: 81.6% pasture; 18.4% idle. 1/ Precipitation data obtained from R-6. 2/ Snow water equivalent on Mar. 26 was .53 in. and had completely melted by Apr. 3. 3/ Precipitation records began June 1938. Runoff records began July 1938. 4/ Mean P based on 74-yr (1891-1964) U.S. Weather Bureau record period at Lancaster, Wis.

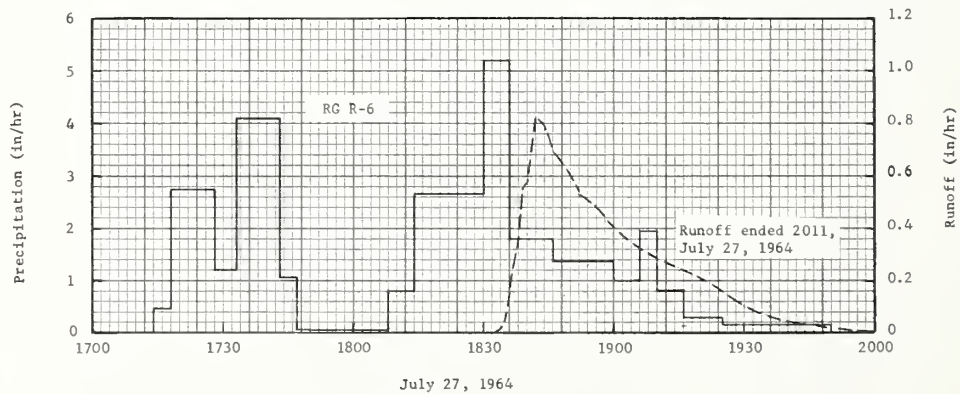
1944			SELECTED RUNOFF EVENT				FENNIMORE, WISCONSIN				WATERSHEO W-2		31.02	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)				
	RG R-6			Event of June 17, 1944										
				RG	R-6									
5-18	.24	.0000	6-17	0857	.00	.00	6-17	0915	.0000	.0000				
5-19	.66	.0000		0906	3.47	.52		0916	.2510	.0021				
5-20	.26	.0000		0910	.30	.54		0918	1.3400	.0303				
5-21	.16	.0000		0917	.17	.56		0919	1.0100	.0499				
5-23	.62	.0000		0920	6.20	.87		0920	.8660	.0655				
5-24	.34	.0000		0924	2.10	1.01		0923	.6310	.1027				
5-30	.06	.0000		0929	1.08	1.10		0925	.5910	.1231				
5-31	.07	.0000		0934	.12	1.11		0926	.6050	.1331				
6- 1	.97	.0000						0929	1.1800	.1778				
6- 5	.16	.0000						0930	1.2500	.1980				
6- 8	.38	.0000						0931	1.1970	.2184				
6- 9	.50	.0000						0935	.8920	.2871				
6-11	.10	.0000						0941	.5450	.3586				
6-12	1.86	.0000						0944	.4300	.3830				
6-13	.45	.0000						0947	.3320	.4020				
6-15	.78	.0258						0953	.1870	.4273				
6-17	5/ .40	6/ .0302						0956	.1510	.4358				
Watershed conditions: 51.3% of area was in corn, 3-4 in.; 40.8% in hay; and 7.9% in small grain.								1000	.1030	.4443				
								1005	.0622	.4512				
								1015	.0270	.4585				
								1030	.0073	.4624				
								1100	.0007	.4642				
								1110	.0000	.4643				

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 22.988. 5/ RAINFALL FROM 0404 TO 0430. 6/ RUNOFF TO 0535.



1964			SELECTED RUNOFF EVENT				FENNIMORE, WISCONSIN				WATERSHED W-2		31.02		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)					
Event of July 27, 1964															
7- 1	RG R-6 .35	.0000	7-27	RG 1714	R-6 .00	.00	7-27	1833	.0000	.0000					
7- 8	1.35	.0000		1718	.45	.03		1835	.0398	.0007					
7-11	.08	.0000		1728	2.76	.49		1837	.2637	.0056					
7-20	.08	.0000		1733	1.20	.59		1839	.5485	.0179					
7-21	.43	.0000		1743	4.08	1.27		1840	.5828	.0274					
								1842	.8198	.0509					
								1844	.7963	.0728					
								1845	.7536	.0907					
								1846	.6946	.1028					
								1850	.6055	.1463					
								1852	.5304	.1653					
								1856	.4890	.1992					
								1858	.4327	.2146					
								1900	.3996	.2285					
								1905	.3485	.2596					
								1910	.2831	.2860					
								1915	.2523	.3083					
								1920	.2057	.3274					
								1925	.1588	.3425					
								1930	.1060	.3536					
								1935	.0726	.3610					
								1940	.0429	.3658					
								1948	.0226	.3702					
								1955	.0103	.3720					
								2000	.0052	.3727					
								2005	.0010	.3729					
								2011	.0000	.3730					
Watershed conditions: 81.6% pasture, 18.4% idle.															

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 22.988. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5.



FENNIMORE, WISCONSIN WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						FENNIMORE, WISCONSIN WATERSHED W-3 AREA — 52.5 ACRES								31.03
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1964 P ¹ / _Q	.41 .00	.15 .00	1.41 ² / .00	4.28 .01	5.53 .00	1.54 .00	6.63 T	4.80 T	2.48 .00	.08 .00	1.05 .00	.59 .00	28.95 .01	
STA AV ³ / _P (38-64) Q	.88 .15	.93 .23	1.90 .58	3.07 .01	3.81 .01	4.81 .13	4.21 .12	3.89 .08	3.59 .02	2.28 .01	2.06 .00	1.06 T	32.49 1.34	
MEAN P 4/ 74 YR —	1.11	1.12	2.01	2.99	4.00	4.42	3.78	3.46	3.79	2.35	1.99	1.28	32.30	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL											
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4- 2	.02	4- 2	.01	4- 2	.01	4- 2	.01	4- 2	.01	4- 2	.01	4- 2	.01

MAXIMUMS FOR PERIOD OF RECORD

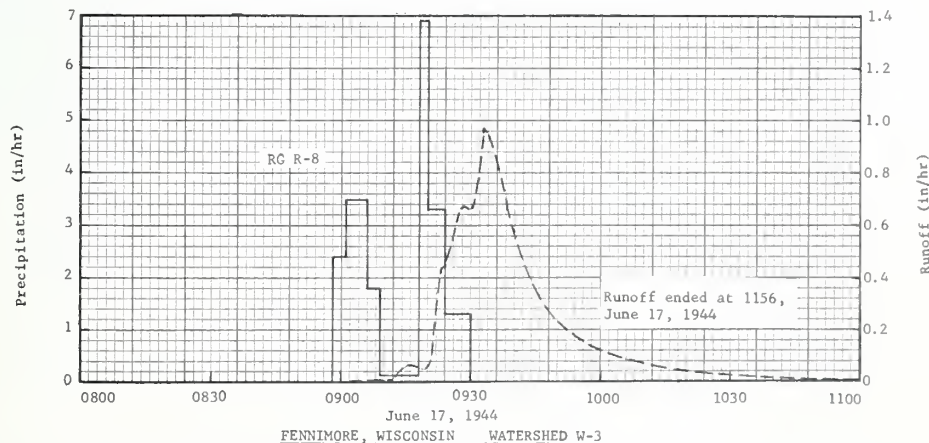
1938 to 1964	6-28 1945	1.63	8- 6 1951	1.01	8- 6 1951	1.32	7-15 1950	2.38	7-15 1950	2.38	7-15 1950	2.38	7-15 1950	2.54
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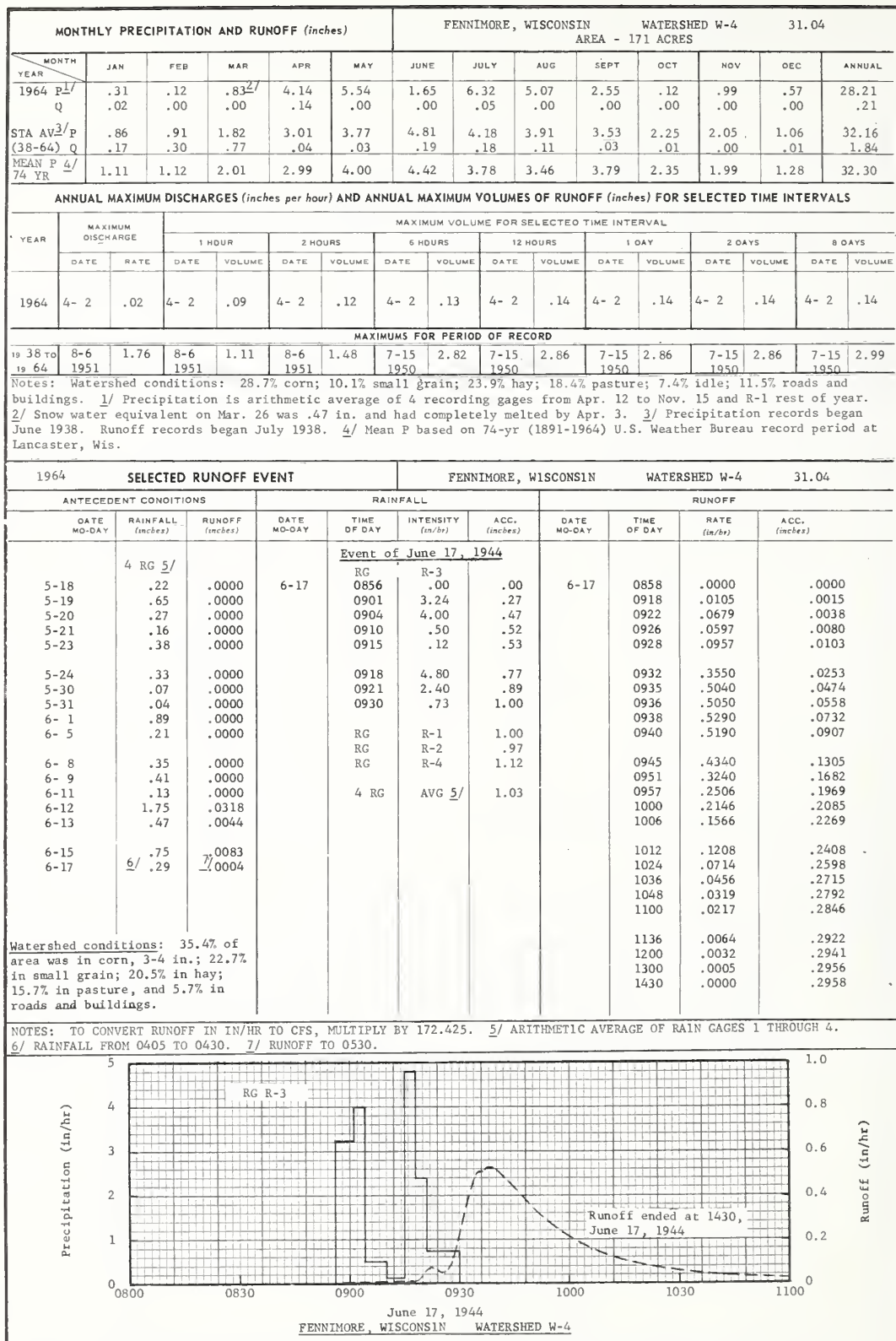
Notes: Watershed conditions: 15.1% corn; 13.5% small grain; 15.8% hay; 44.5% pasture; 7.3% idle; 3.8% roads and buildings. 1/ Precipitation is arithmetic average of two recording gages from Apr. 12 to Nov. 15 and R-8 rest of year. 2/ Snow water equivalent on Mar. 26 was .53 in. and had completely melted by Apr. 3. 3/ Precipitation records began June 1938. Runoff records began July 1938. 4/ Mean P based on 74-yr (1891-1964) U.S. Weather Bureau record period at Lancaster, Wis.

1964			SELECTED RUNOFF EVENT			FENNIMORE, WISCONSIN			WATERSHED W-3			31.03	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
	2 RG 5/			Event of June 17, 1964									
				RG	R-8								
5-18	.25	.0000	6-17	0858	.00	.00	6-17	0902	.0000	.0000			
5-19	.69	.0000		0901	2.40	.12		0912	.0135	.0009			
5-20	.23	.0000		0906	3.48	.41		0916	.0639	.0039			
5-21	.15	.0000		0909	1.80	.50		0919	.0510	.0067			
5-23	.56	.0000		0918	.13	.52		0921	.1165	.0091			
5-24	.28	.0000		0920	6.90	.75		0923	.4350	.0182			
5-30	.10	.0000		0924	3.30	.97		0927	.6370	.0527			
5-31	.04	.0000		0930	1.30	1.10		0928	.6690	.0636			
6-1	.95	.0000						0930	.6640	.0858			
6-5	.19	.0000						0933	.9690	.1254			
6-8	.37	.0000		RG	R-7	1.16		0934	.9410	.1413			
6-9	.49	.0000		2 RG	AVG 5/	1.13		0936	.8350	.1710			
6-11	.14	.0000						0940	.5790	.2179			
6-12	1.83	.0221						0944	.3930	.2497			
6-13	.37	.0008						0948	.2760	.2716			
6-15	.76	.0000						0954	.1796	.2942			
6-17	6/ .37	7/ .0064						1000	.1214	.3089			
								1012	.0648	.3270			
								1036	.0178	.3418			
								1100	.0045	.3457			
Watershed conditions: 37% corn, 3-4 in.; 3.4% small grain; 23.8% hay; 28.5% pasture, 7.3% roads and buildings.								1156	.0000	.3471			

Watershed conditions: 37% corn, 3-4 in.; 3.4% small grain; 23.8% hay; 28.5% pasture, 7.3% roads and buildings.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 52.397. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 5/ ARITHMETIC AVERAGE OF RAIN GAGES 7 AND 8. 6/ RAINFALL FROM 0405 TO 0430. 7/ RUNOFF TO 0600.

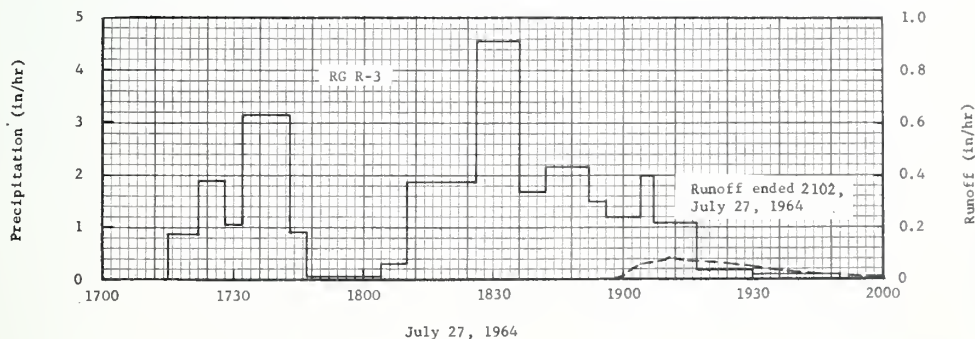




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1964 SELECTED RUNOFF EVENT			FENNIMORE, WISCONSIN			WATERSHED W-4			31.04
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
4 RG 1/ 7- 1 .27 .0000 7- 8 1.31 .0000 7-11 .12 .0000 7-20 .16 .0000 7-21 .38 .0000 Watershed conditions: 28.7% corn, 10.1% small grain, 23.9% hay, 18.4% pasture, 7.4% idle, 11.5% roads and buildings.			Event of July 27, 1964						
			7-27	RG	R-3	.00	7-27	1858	.0000
				1715	.00	.00		1859	.0034
				1722	.86	.10		1900	.0126
				1728	1.90	.29		1901	.0261
				1732	1.05	.36		1902	.0407
				1743	3.16	.94			
				1747	.90	1.00		1904	.0598
				1804	.04	1.01		1908	.0737
				1810	.30	1.04		1909	.0766
				1826	1.87	1.54		1911	.0812
				1836	4.56	2.30		1914	.0766
				1842	1.70	2.47		1920	.0702
				1852	2.16	2.83		1932	.0436
				1856	1.50	2.93		1940	.0273
				1904	1.20	3.09		1950	.0143
				1907	2.00	3.19		2000	.0075
				1917	1.08	3.37		2005	.0052
				1930	.18	3.41		2011	.0034
				1950	.09	3.44		2016	.0024
				RG	R-1	3.32		2025	.0012
				RG	R-2	3.24		2030	.0008
				RG	R-4	3.73		2032	.0007
				4 RG	AVG 1/	3.43		2040	.0003
								2045	.0002
								2051	.0001
								2058	.0001
								2102	.0000

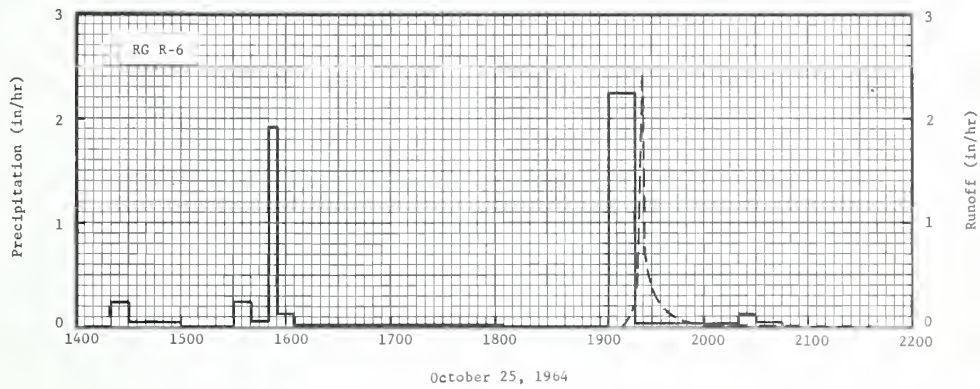
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 172.425. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 31.1-5. 1/ ARITHMETIC AVERAGE OF RAIN GAGES 1 THROUGH 4.



FENNIMORE, WISCONSIN WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-10 AREA - 1.68 ACRES								34.10		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.72 .00	.87 .00	.59 .00	2.14 .12	2.10 .00	3.31 .01	.15 .00	5.33 .23	.85 .00	1.48 .23	5.75 1.44	1.19 .00	24.48 2.03			
STA AV2/P (60-64) Q	.37 .00	.32 .00	1.58 .12	1.98 .06	2.81 .49	5.66 1.09	2.84 .34	2.52 .05	2.70 .55	1.73 .10	2.11 .30	.86 .01	25.48 3.11			
MEAN P 3/ 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	10-25	2.41	11-16	.45	11-16	.49	11-16	.49	11-15	.64	11-15	1.13	11-15	1.18	11-15	1.28
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1964	9-14 1962	3.77	6-22 1963	1.16	6-22 1963	1.32	6-22 1963	1.37	6-22 1963	1.37	6-22 1963	2.42	6-22 1963	2.42	6-22 1963	2.42
NOTES: Watershed conditions: Continuous wheat annually, tillage during fallow period with chisel type field cultivator (Hoeme) to 6-inch depth with cross chiseling if necessary to obtain good tillage, final tillage before seeding wheat with a rod weeder. 1/ Precipitation data obtained from a standard gage at Rain Gage 5 location. 2/ Precipitation and runoff records began August 1960. 3/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Oklahoma with 20 missing months between 1943-59 estimated. The Weather Bureau Records began June 1915.																
1964 SELECTED RUNOFF EVENT						CHEROKEE, OKLAHOMA WATERSHED W-10								34.10		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of October 25, 1964																
10-11	RG R-6 .01	.00	10-25	RG 1420	R-6 .00	.00	10-25	1912	.0000	.00						
10-24	.41	.00		1430	.24	.04		1914	.0204	.00						
10-25	4/.13	5/.00		1500	.04	.06		1916	.0665	.00						
				1530	.00	.06		1918	.122	.00						
				1540	.24	.10		1920	.285	.01						
				1550	.06	.11		1922	.524	.02						
				1555	1.92	.27		1923	1.51	.04						
				1605	.12	.29		1924	2.41	.07						
				1705	.01	.30		1925	1.39	.11						
Watershed conditions: 100% of area was planted to winter wheat on October 8, 1964. Soil loose and dry on top, moist below. Wheat was barely up to a good stand.																
				1805	.01	.31		1926	.804	.12						
				1905	.00	.31		1927	.636	.14						
				1920	2.24	.87		1928	.490	.15						
				2020	.02	.89		1930	.365	.16						
				2030	.12	.91		1934	.237	.18						
				2045	.04	.92		1936	.174	.19						
								1938	.130	.19						
								1944	.0990	.20						
								1947	.0852	.21						
								1948	.0501	.21						
								1952	.0360	.21						
								2000	.0240	.22						
								2012	.0138	.22						
								2030	.0084	.22						
								2042	.0043	.22						
								2106	.0012	.23						
								2150	.0000	.23						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.10-4.																
4/ RAINFALL TOTAL TO 1235. 5/ NO RUNOFF PRIOR TO 1912.																

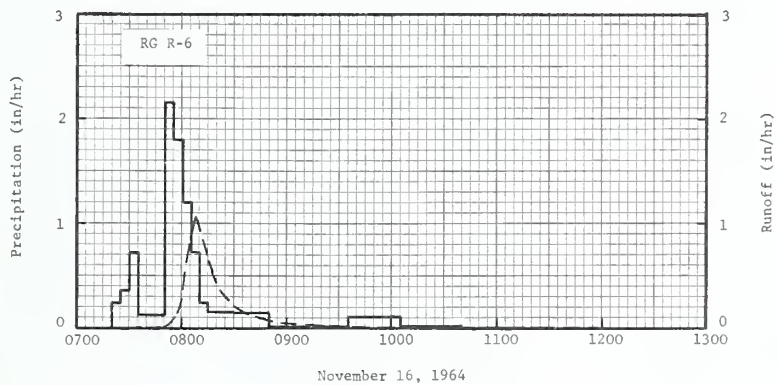
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CHEROKEE, OKLAHOMA WATERSHED W-10

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-11 AREA - 2.12 ACRES								34.11		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.72 .00	.88 .00	.61 .00	2.15 .03	2.07 .00	3.22 .00	.13 .00	5.36 .01	.85 .00	1.44 .08	5.68 .99	1.23 .00	24.34 1.11			
STA AV2/P (60-64) Q	.37 .00	.35 .00	1.60 .12	2.02 .04	2.78 .30	5.58 .62	2.80 .16	2.50 .02	2.67 .30	1.68 .03	2.09 .20	.87 T	25.31 1.79			
MEAN P 3/ 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	11-16	1.07	11-16	.36	11-16	.39	11-16	.40	11-15	.53	11-15	.83	11-15	.85	11-15	.88
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1964	6-2 1961	2.03	6-2 1961	.92	6-2 1961	.94	6-2 1961	.95	6-2 1961	.95	6-2 1961	.95	6-2 1961	.95	9-4 1963	1.13
NOTES: Watershed conditions: Continuous wheat annually, tillage during fallow period with large sweeps (8 ft.), final tillage before seeding wheat with a rod weeder. 1/ Precipitation data obtained from a standard gage at Rain Gage 6 location. 2/ Precipitation and runoff records began August 1960. 3/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Oklahoma with 20 missing months between 1943-59 estimated. The Weather Bureau records began June 1915.																
1964 SELECTED RUNOFF EVENT						CHEROKEE, OKLAHOMA WATERSHED W-11								34.11		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG			Event of November 16, 1964												
	R-6			RG	R-6											
10-24	.41	.00	11-16	0720	.00	.00	11-16	0728	.0000	.00						
10-25	1.05	.08		0725	.24	.02		0750	.0097	.00						
10-26	.01	.00		0730	.36	.05		0754	.0551	.00						
11 -3	1.31	.10		0735	.72	.11		0756	.1058	.01						
11 -4	.21	.00		0750	.12	.14		0758	.163	.01						
11 -5	.78	.01		0755	2.16	.32		0800	.289	.02						
11-15	1.59	.39		0800	1.80	.47		0801	.395	.02						
11-16	4/.21	5/.04		0805	1.20	.57		0802	.518	.03						
				0810	.72	.63		0803	.659	.04						
				0815	.24	.65		0804	.778	.05						
				0830	.16	.69		0805	.862	.07						
				0850	.15	.74		0806	.998	.08						
				0935	.01	.75		0808	1.07	.12						
				1005	.12	.81		0810	.975	.15						
				1040	.02	.82		0814	.737	.21						
Watershed conditions: 100% of area was planted to winter wheat on October 8, 1964. Soil moist and firm. Wheat stand good, but very thin cover.																
								0817	.552	.24						
								0820	.439	.27						
								0822	.353	.28						
								0826	.277	.30						
								0830	.211	.32						
								0835	.145	.33						
								0844	.0987	.35						
								0851	.0725	.36						
								0900	.0498	.37						
								0914	.0311	.38						
								0922	.0231	.38						
								0948	.0097	.39						
								1004	.0097	.39						
								1158	.0000	.40						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1377. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.11-4. 4/ RAINFALL TOTAL TO 0300. 5/ RUNOFF TOTAL TO 0728.																

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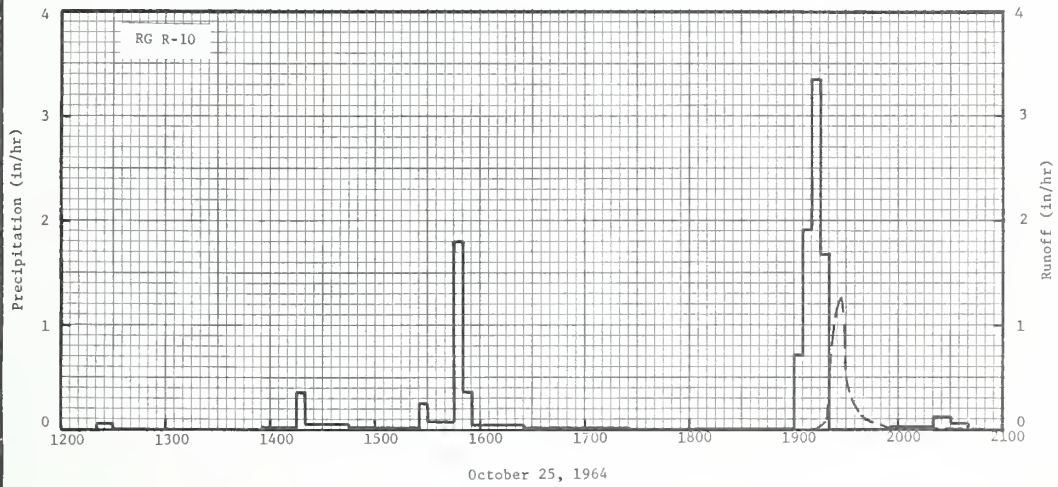
CHEROKEE, OKLAHOMA WATERSHED W-11

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-12 AREA - 1.68 ACRES								34.12		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.72 .00	.90 .00	.60 .00	2.01 .02	1.99 .00	3.15 .00	.14 .00	5.29 .27	.87 .00	1.51 .22	5.91 1.23	1.14 .00	24.23 1.74			
STA AV2/P (60-64) Q	.40 .00	.35 .00	1.54 .08	1.91 .03	2.73 .44	5.52 1.12	3.27 .46	2.52 .05	2.66 .32	1.73 .06	2.13 .25	.83 T	25.59 2.81			
MEAN P 3/ 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	10-25	1.27	11-16	.43	11-16	.46	11-16	.47	11-15	.61	11-15	.99	11-15	1.08	11-15	1.08
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1964	6-2 1961	2.96	6-2 1961	1.28	6-2 1961	1.29	6-22 1963	1.32	6-22 1963	1.32	6-22 1963	2.40	6-22 1963	2.40	6-22 1963	2.40
NOTES: Watershed conditions: Continuous wheat annually, first tillage during fallow period with one-way disc harrow shallow (2 in. to 2-1/2 in.), succeeding tillages with chisel type field cultivator (Hoeme) to maximum depth of 6 inches and final tillage before seeding wheat with same tool with sweeps on shanks. 1/ Precipitation data obtained from a standard gage at Rain Gage 10 location. 2/ Precipitation and runoff records began July 1960. 3/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Oklahoma with 20 missing months between 1943-59 estimated. The Weather Bureau records began June 1915.																
1964 SELECTED RUNOFF EVENT						CHEROKEE, OKLAHOMA				WATERSHED W-12				34.12		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of October 25, 1964																
10-11 10-24 10-25	RG R-10 .01 .41 4/.08	.00 .00 5/.00	10-25	RG	R-10		10-25	1910	.0000	.00						
	1220			.00	.00	1912		.0012	.00							
	1230			.06	.01	1914		.0205	.00							
	1355			.00	.01	1916		.0362	.00							
	1415			.03	.02											
	1420			.36	.05	1918		.0668	.00							
	1445			.05	.07	1919		.139	.00							
	1525			.02	.08	1920		.262	.01							
	1530			.24	.10	1921		.396	.01							
	1545			.08	.12	1922		.720	.02							
Watershed conditions: 100% of area was planted to winter wheat on October 8, 1964. Soil loose and dry on top, moist below. Wheat was barely up to a good stand.																
				1550	1.80	.27		1923	1.08	.04						
				1555	.36	.30		1924	1.16	.06						
				1625	.04	.32		1926	1.22	.10						
				1725	.01	.33		1927	1.27	.12						
				1900	.00	.33		1928	1.00	.14						
				1905	.72	.39		1929	.741	.15						
				1910	1.92	.55		1930	.562	.16						
				1915	3.36	.83		1932	.396	.18						
				1920	1.68	.97		1934	.274	.19						
				1955	.00	.97		1936	.185	.20						
				2020	.02	.98		1938	.122	.20						
				2030	.12	1.00		1940	.0994	.20						
				2040	.06	1.01		1944	.0610	.21						
								1950	.0406	.22						
								1956	.0205	.22						
								2000	.0139	.22						
								2004	.0085	.22						
								2012	.0043	.22						
								2022	.0012	.22						
								2050	.0000	.22						

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.6940 . FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.12-5.

4/ RAINFALL TOTAL TO 0815. 5/ NO RUNOFF PRIOR TO 1910.

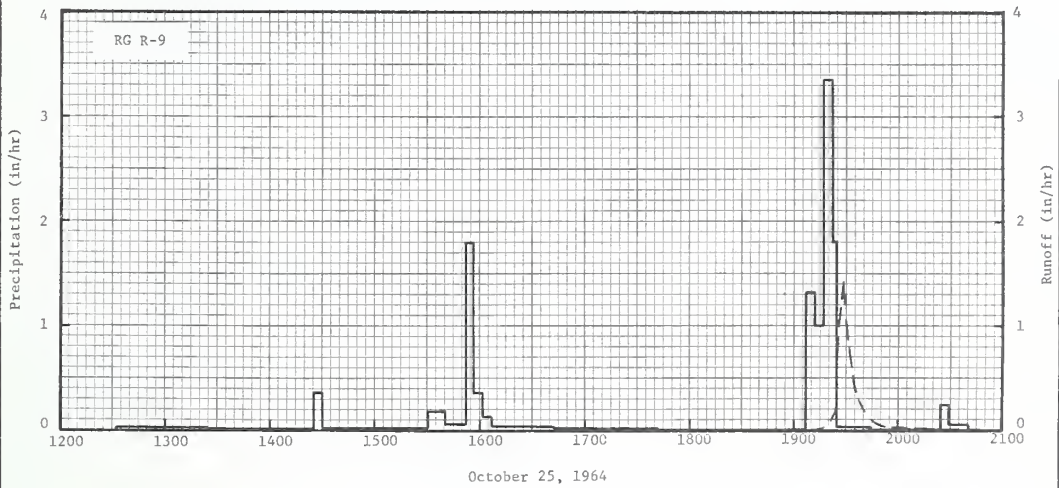
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CHEROKEE, OKLAHOMA WATERSHED W-12

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHEROKEE, OKLAHOMA WATERSHED W-13 AREA - 1.99 ACRES							34.13		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/ Q	.72 .00	.89 .00	.61 .00	2.13 T	2.05 .00	3.25 .00	.15 .00	5.41 .05	.87 .00	1.55 .22	5.82 1.41	1.06 .00	24.51 1.68		
STA AV2/P (60-64) Q		.37 .00	.33 .00	1.57 .10	2.04 .02	2.79 .40	5.54 .82	3.38 .30	2.57 .01	2.70 .31	1.77 .05	2.15 .28	.84 T	26.05 2.29		
MEAN P 3/ 49 YR		.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	10-25	1.42	11-16	.46	11-16	.50	11-16	.52	11-15	.69	11-15	1.11	11-15	1.11	11-15	1.17
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1964	6-2 1961	2.83	6-2 1961	1.16	6-2 1961	1.20	6-2 1961	1.20	6-2 1961	1.20	6-22 1963	1.56	6-22 1963	1.56	6-22 1963	1.56
NOTES: Watershed conditions: Continuous wheat annually, tillage during fallow period with chisel type field cultivator (Hoeme) to 6 inch depth with cross chiseling if necessary to obtain good tillage, final tillage before seeding wheat with a rod weeder. 1/ Precipitation data obtained from a standard gage at Rain Gage 9 location. 2/ Precipitation and runoff records began July 1960. 3/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Oklahoma with 20 missing months between 1943-59 estimated. The Weather Bureau records began June 1915.																
1964 SELECTED RUNOFF EVENT							CHEROKEE, OKLAHOMA WATERSHED W-13							34.13		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-9															
10-11	.01	.00	10-25	1232	.00	.00	10-25	1910	.0000	.00						
10-24	.42	.00		1325	.02	.02		1914	.0010	.00						
10-25	4/.10	5/.00		1425	.01	.03		1916	.0036	.00						
				1430	.36	.06		1917	.0173	.00						
				1530	.02	.08		1918	.0382	.00						
				1540	.18	.11		1920	.0468	.00						
				1552	.05	.12		1922	.0899	.00						
				1557	1.80	.27		1923	.164	.01						
				1602	.36	.30		1924	.444	.01						
Watershed conditions: 100% of area was planted to winter wheat on October 8, 1964. Soil loose and dry on top, moist below. Wheat was barely up to a good stand.																
				1607	.12	.31		1925	.681	.02						
				1642	.02	.32		1926	.822	.03						
				1742	.01	.33		1927	1.17	.05						
				1907	.00	.33		1928	1.42	.07						
				1912	1.32	.44		1929	1.28	.09						
				1917	1.00	.64		1930	1.07	.11						
				1922	3.36	.92		1932	.800	.14						
				1924	1.80	.98		1934	.522	.17						
				1944	.03	.99		1936	.373	.18						
				2024	.00	.99		1938	.263	.19						
				2029	.24	1.01		1940	.191	.20						
				2040	.05	1.02		1944	.103	.21						
								1948	.0613	.22						
								1950	.0468	.22						
								1956	.0235	.22						
								2000	.0143	.22						
								2007	.0071	.22						
								2035	.0010	.22						
								2054	.0000	.22						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.0066. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.13-5.																
4/ RAINFALL TOTAL TO 0847. 5/ NO RUNOFF PRIOR TO 1910.																

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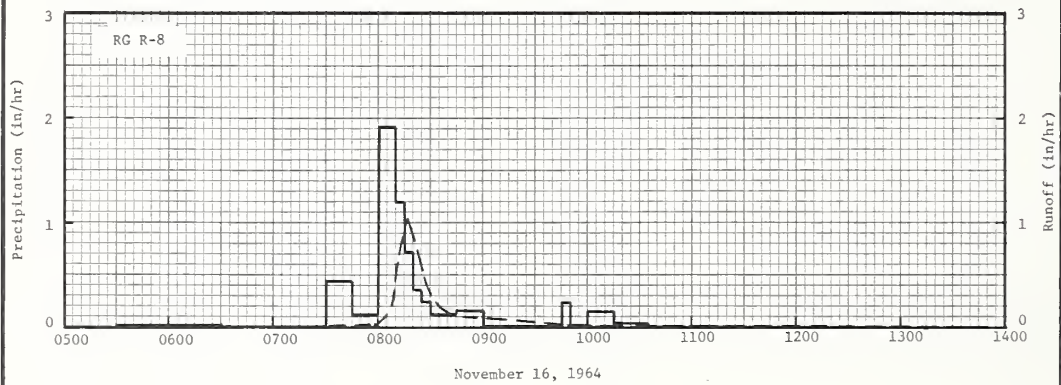


CHEROKEE, OKLAHOMA WATERSHED W-13

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-14 AREA - 2.16 ACRES								34.14		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q 2/	.72	.89	.61	2.13	2.05	3.25	.15	5.41	.87	1.55	5.82	1.06	24.51			
STA AV3/P (60-63)Q4/	.37	.33	1.57	2.04	2.79	5.54	2.84	2.53	2.70	1.77	2.15	.84	25.47			
MEAN P 5/ 49 YR	.00	.00	.06	.03	.50	1.23	.49	.00	.33	.01	.00	T	2.65			
	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964 6/	-	.	-	.	-	.	-	.	-	.	-	.	-	.	-	.
MAXIMUMS FOR PERIOD OF RECORD																
19 60 TO	7-28	3.15	7-28	1.20	7-28	1.36	7-28	1.37	7-28	1.37	6-22	2.18	6-22	2.18	6-22	2.18
19 63	1963		1963		1963		1963		1963		1963		1963		1963	
NOTES: Watershed conditions: Continuous wheat annually, first tillage during fallow period with one-way disc harrow shallow (2 in. to 2-1/2 in.), succeeding tillages with chisel type field cultivator (Hoeme) to maximum depth of 6 inches and final tillage before seeding wheat with same tool with sweeps on shanks. 1/ Precipitation data obtained from a standard gage at Rain Gage 9 location. 2/ No runoff record for 1964 due to hole in gage well. 3/ Station average of precipitation for 1960-64, record began September 1960. 4/ Station average of runoff for 1960-63 only, record began September 1960. 5/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Oklahoma with 20 missing months between 1943-59 estimated. The Weather Bureau records began June 1915. 6/ No record for 1964 due to hole in gage well.																
NO SELECTED RUNOFF EVENT REPORTED. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.14-4.																

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHEROKEE, OKLAHOMA WATERSHED W-15 AREA - 2.15 ACRES								34.15		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.72 .00	.93 .00	.61 .00	1.92 .02	1.99 .00	3.20 .00	.17 .00	5.03 .05	.82 .00	1.53 .13	5.78 1.18	1.10 .00	23.80 1.38			
STA AV2/P (60-64) Q	.38 .00	.34 .00	1.56 .14	1.96 .04	2.75 .63	5.46 1.12	2.77 .20	2.40 .02	2.61 .24	1.73 .03	2.13 .25	.85 .01	24.94 2.68			
MEAN P 3/ 49 YR	.80	.89	1.65	2.83	3.85	3.92	2.31	2.89	2.74	2.24	1.36	.96	26.44			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-16	1.05	11-16	.33	11-16	.37	11-16	.39	11-15	.57	11-15	.89	11-15	.94	11-15	.98
MAXIMUMS FOR PERIOD OF RECORD																
1960 TO 1964	6-2 1961	2.64	6-23 1963	1.30	6-23 1963	1.53	6-23 1963	1.58	6-22 1963	1.67	6-22 1963	2.90	6-22 1963	2.90	6-22 1963	2.90
NOTES: Watershed conditions: Continuous wheat annually, tillage during fallow period with large sweeps (8 ft.), final tillage before seeding wheat with a rod weeder. 1/ Precipitation data obtained from a standard gage at Rain Gage 8 location. 2/ Precipitation and runoff records began September 1960. 3/ Mean P based on 49-year (1915-63) U. S. Weather Bureau record period at Cherokee, Oklahoma with 20 missing months between 1943-59 estimated. The Weather Bureau records began June 1915.																
1964 SELECTED RUNOFF EVENT						CHEROKEE, OKLAHOMA WATERSHED W-15								34.15		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG			Event of November 16, 1964												
	R-8															
10-24	.38	.00	11-16	RG	R-8		11-16	0732	.0000	.00						
10-25	1.14	.13		0530	.00	.00		0736	.0014	.00						
11 -3	1.42	.18		0630	.01	.01		0738	.0049	.00						
11 -4	.18	.00		0730	.00	.01		0754	.0049	.00						
				0745	.44	.12										
11 -5	.76	.03		0800	.12	.15		0756	.0096	.00						
11-15	1.61	.44		0805	1.92	.31		0758	.0228	.00						
11-16	4/.19	5/.06		0810	1.92	.47		0800	.0441	.00						
				0815	1.20	.57		0802	.0597	.00						
				0820	.72	.63		0804	.0972	.01						
				0825	.36	.66		0806	.127	.01						
				0830	.24	.68		0808	.218	.02						
				0845	.12	.71		0809	.335	.02						
				0900	.16	.75		0810	.494	.03						
				0945	.00	.75		0812	.687	.05						
				0950	.24	.77		0814	.807	.07						
				1000	.00	.77		0816	.937	.10						
				1015	.16	.81		0817	1.05	.12						
				1035	.03	.82		0820	.871	.17						
								0824	.668	.22						
								0826	.543	.24						
								0828	.418	.25						
								0830	.322	.27						
								0834	.218	.28						
								0838	.152	.30						
								0842	.104	.31						
								0900	.0904	.33						
								0910	.0654	.35						
								0920	.0490	.36						
								0930	.0393	.36						
								0940	.0266	.37						
								0950	.0155	.37						
								1000	.0124	.38						
								1030	.0124	.38						
								1056	.0096	.39						
								1110	.0049	.39						
								1130	.0049	.39						
								1220	.0014	.39						
								1350	.0000	.39						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.1679 . FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 34.15-4.																
4/ RAINFALL ENDED AT 0245. 5/ RUNOFF ENDED AT 0540.																

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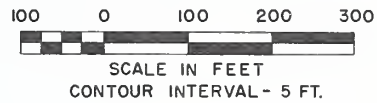
CHEROKEE, OKLAHOMA WATERSHED W-15

REVISION OF PREVIOUSLY PUBLISHED MAP

WATERSHED CHARACTERISTICS

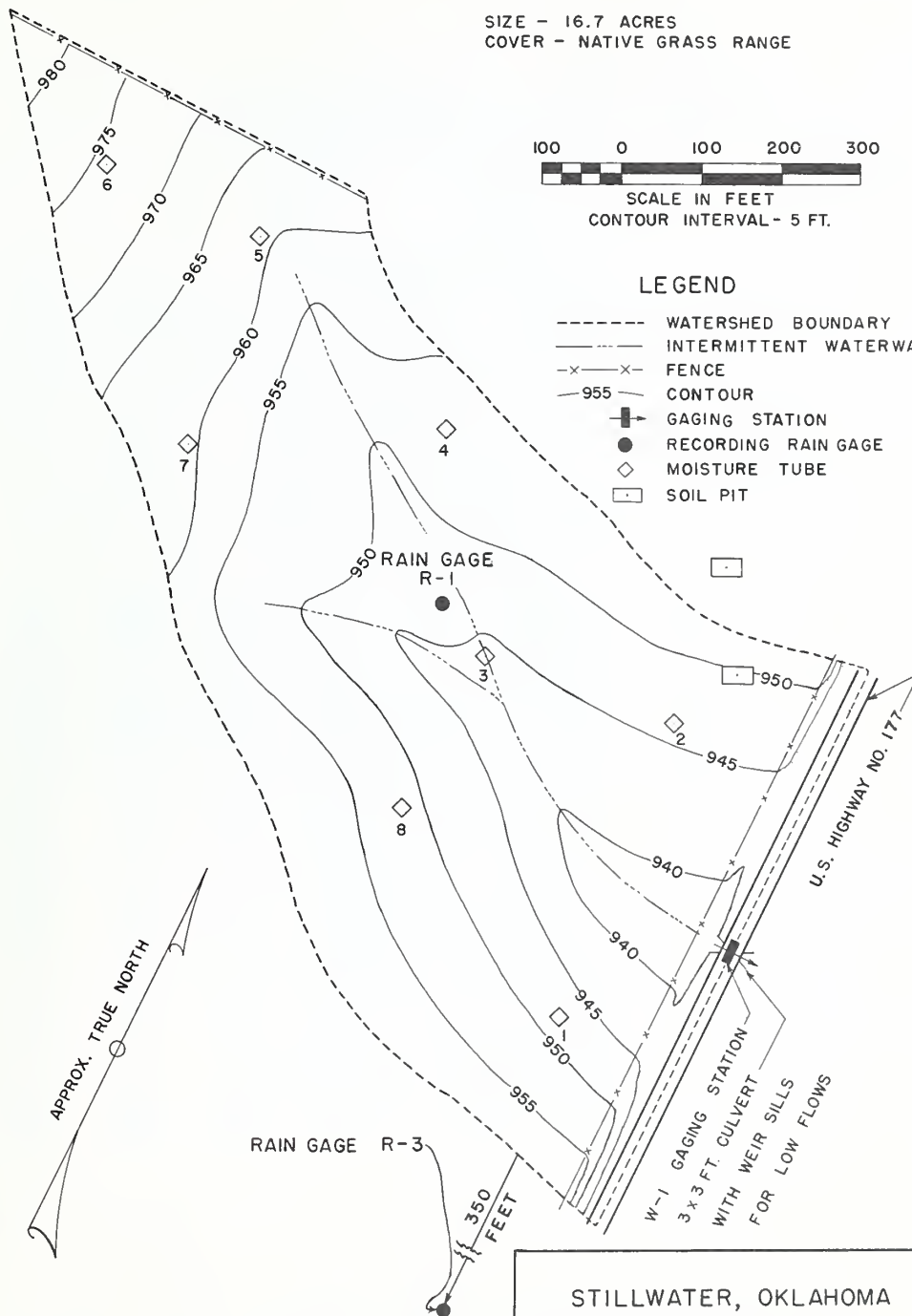
SIZE - 16.7 ACRES

COVER - NATIVE GRASS RANGE



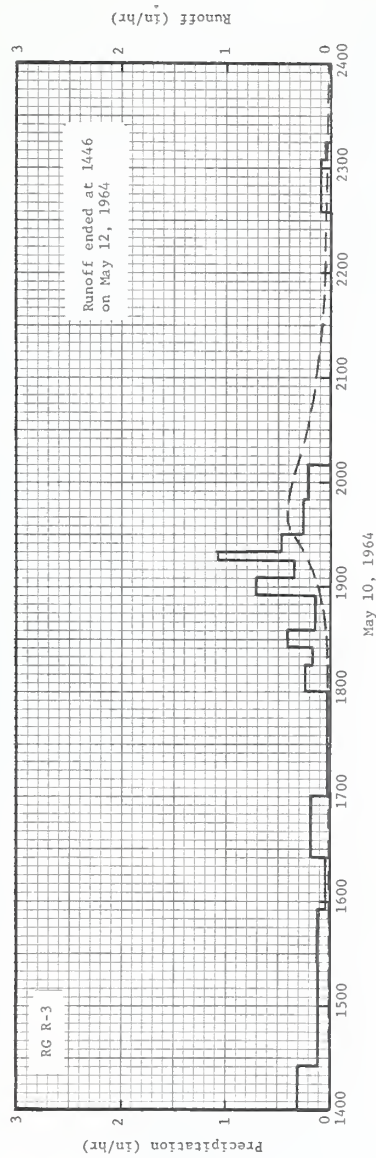
LEGEND

- WATERSHED BOUNDARY
- - - INTERMITTENT WATERWAY
- x-x- FENCE
- 955--- CONTOUR
- ⊞ GAGING STATION
- RECORDING RAIN GAGE
- ◇ MOISTURE TUBE
- SOIL PIT



MONTHLY PRECIPITATION AND RUNOFF (inches)						STILLWATER, OKLAHOMA WATERSHED W-1 AREA - 16.7 ACRES								37.1		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.52 .02	1.39 1.08	1.03 .36	2.46 1.62	5.05 1.37	1.32 .00	1.32 .00	8.36 .44	2.73 .06	.87 .00	4.98 2.59	.80 .39	30.83 7.93			
STA AV2/P (51-64) Q	.52 .08	1.09 .24	2.13 .77	2.22 .67	5.45 1.94	3.92 1.04	4.48 .79	2.96 .09	3.42 .41	2.71 .74	1.68 .49	1.04 .22	31.62 7.48			
MEAN P 3/ 71 YR	1.10	1.26	2.13	3.43	4.78	4.14	3.12	3.03	3.71	2.89	2.05	1.34	32.98			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-4	.65	4-4	.37	5-10	.56	5-10	.76	5-10	.85	4-3	1.46	4-3	1.58	11-15	2.17
MAXIMUMS FOR PERIOD OF RECORD																
1951 to 1964	4-18 1957	6.99	7-15 1951	3.31	7-15 1951	3.74	7-15 1951	3.96	10-2 1959	4.52	7-14 1951	5.18	10-1 1959	5.68	9-29 1959	7.62
NOTES: Watershed conditions: All native grass pasture located in region (H-80) of the Central Rolling Red Prairies land resource area. The pasture was very lightly grazed from January through September, and grossly over-grazed in October and November. Precipitation was 2-1/2 inches below normal accumulation at the beginning of the growing season and an additional 4-1/2 inch deficit occurred during June and July. In August rainfall was 5-1/3 inches above average for this month. 1/ Precipitation data obtained from R-3 recording rain gage. 2/ Precipitation and runoff records began July 1951. 3/ Mean P based on 71-year (1893-1963) U. S. Weather Bureau record period at Stillwater, Oklahoma.																
1964 SELECTED RUNOFF EVENT						STILLWATER, OKLAHOMA WATERSHED W-1								37.1		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG															
	R-3				RG	R-3										
4-17	.02	.000	5-10	1400	.00	.00	5-10	1436	.0000	.000						
4-20	.18	.000		1425	.31	.13		1634	.0036	.004						
4-24	.11	.000		1525	.11	.24		1650	.0060	.005						
4-25	.01	.000		1555	.12	.30		1702	.0105	.006						
4-26	.07	.000		1625	.04	.32		1719	.0214	.011						
4-29	.01	.000		1700	.19	.43		1810	.0310	.036						
5-1	1.37	.364		1800	.03	.46		1832	.0452	.049						
5-2	.00	.035		1815	.24	.52		1848	.0869	.066						
5-3	.00	.002		1825	.18	.55		1900	.117	.086						
5-6	.61	.060		1835	.42	.62		1915	.211	.126						
5-7	.00	.007		1855	.15	.67		1927	.332	.179						
5-8	.11	.000		1900	.72	.73		1936	.410	.236						
5-10	4/.18	.000		1905	.72	.79		1941	.418	.271						
				1915	.36	.85		1948	.410	.319						
				1920	1.08	.94		2005	.347	.426						
				1930	.48	1.02		2019	.283	.500						
				1950	.27	1.11		2050	.168	.617						
				2010	.21	1.18		2107	.123	.658						
				2235	.00	1.18		2128	.0869	.695						
				2305	.10	1.23		2208	.0425	.736						
				2315	.06	1.24		2245	.0274	.757						
								2342	.0256	.782						
								2400	.0241	.789						
								5-11								
								0120	.0167	.816						
								0245	.0097	.835						
								0535	.0042	.853						
								2400	.0008	.884						
								5-12	1446	.0000	.892					
Watershed conditions: 100% of area in native grass pasture in good condition at beginning of growing season.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 16.839. FOR REVISED MAP OF WATERSHED, SEE PREVIOUS PAGE. FOR ORIGINAL MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 37.1-7. 4/ RAIN PRIOR TO 1400.																

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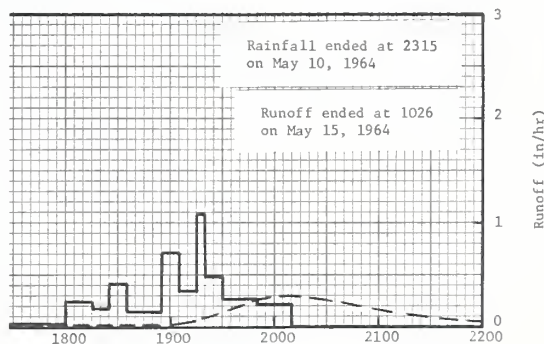
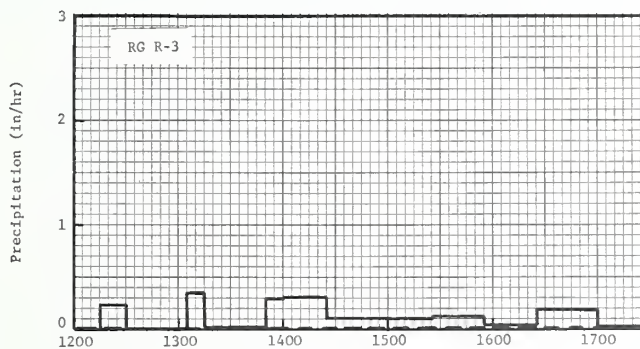
STILLWATER, OKLAHOMA WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)							STILLWATER, OKLAHOMA WATERSHED W-3 AREA - 92.0 ACRES							37.2		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/ Q	.52 .00	1.39 .50	1.03 .14	2.46 1.17	5.05 .93	1.32 .00	1.32 .00	8.36 .23	2.73 .02	.87 .00	4.98 1.39	.80 .14	30.83 4.52		
STA AV2/P (51-64) Q		.52 .04	1.09 .14	2.13 .60	2.22 .56	5.45 1.77	3.92 .91	4.48 .79	2.96 .08	3.42 .37	2.71 .69	1.68 .24	1.04 .11	31.62 6.30		
MEAN P 3/ 71 YR		1.10	1.26	2.13	3.43	4.78	4.14	3.12	3.03	3.71	2.89	2.05	1.34	32.98		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.30	5-10	.27	5-10	.43	5-10	.59	5-10	.64	4-4	1.09	4-4	1.14	11-15	1.26
MAXIMUMS FOR PERIOD OF RECORD																
1951 to 19 64	7-15 1951	4.74	7-15 1951	2.87	7-15 1951	3.49	7-15 1951	3.80	10-2 1959	4.96	10-1 1959	5.18	10-1 1959	6.08	9-30 1959	8.08
NOTES: Watershed conditions: All native grass cover, 32% of watershed area in hay meadow and 68% in pasture, and located in region (H-80) of the Central Rolling Red Prairies land resource area. The meadow portion produced only about half the normal hay crop, due to a deficit in rainfall accumulation of 7-inches up to harvesting time. An excess of 5-1/3 inches above average rainfall in August accelerated regrowth and restored a good cover. In general the pasture portion was over-grazed and the cover condition changed from fair to poor during the year. 1/ Precipitation data obtained from R-3 recording rain gage. 2/ Precipitation and runoff records began July 1951. 3/ Mean P based on 71-year (1893-1963) U. S. Weather Bureau record period at Stillwater, Oklahoma.																
1964 SELECTED RUNOFF EVENT							STILLWATER, OKLAHOMA WATERSHED W-3							37.2		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of May 10, 1964																
	RG				RG	R-3										
4-17	.02	.000	5-10	1215	.00	.00	5-10	0001	.0001	.000						
4-20	.18	.000		1230	.24	.06		1215	.0001	.001						
4-24	.11	.000		1305	.00	.06		1330	.0003	.001						
4-25	.01	.000		1315	.36	.12		1430	.0004	.002						
4-26	.07	.000		1350	.02	.13		1615	.0005	.003						
4-29	.01	.000		1400	.30	.18		1642	.0009	.003						
5-1	1.37	.159		1425	.31	.31		1659	.0019	.003						
5-2	.00	.024		1525	.11	.42		1713	.0024	.004						
5-3	.00	.007		1555	.12	.48		1737	.0034	.005						
5-4	.00	.004		1625	.04	.50		1753	.0049	.006						
5-5	.00	.001		1700	.19	.61		1803	.0051	.007						
5-6	.61	.025		1800	.03	.64		1815	.0071	.008						
5-7	.00	.009		1815	.24	.70		1823	.0119	.009						
5-8	.11	.007		1825	.18	.73		1831	.0159	.011						
5-9	.00	4/.005		1835	.42	.80		1841	.0200	.014						
				1855	.15	.85		1856	.0314	.020						
				1900	.72	.91		1905	.0471	.026						
				1905	.72	.97		1913	.0678	.034						
				1915	.36	1.03		1920	.0951	.043						
Watershed conditions: 100% of area in native grass; 32% used as hay meadow in excellent condition, 46% in pasture in fair condition and 22% in pasture in good condition.				1920	1.08	1.12		1928	.1338	.058						
				1930	.48	1.20		1936	.1866	.079						
				1950	.27	1.29		1947	.2429	.118						
				2010	.21	1.36		2000	.2886	.177						
				2235	.00	1.36		2009	.2977	.221						
				2305	.10	1.41		2014	.2959	.245						
				2315	.06	1.42		2023	.2789	.288						
								2035	.2418	.341						
								2058	.1769	.420						
								2118	.1181	.469						
								2142	.0809	.509						
								2205	.0540	.534						
								2220	.0409	.546						
								2249	.0292	.562						
								2400	.0207	.592						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 92.766. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 37.2-6. 4/ RUNOFF TO 2400.																

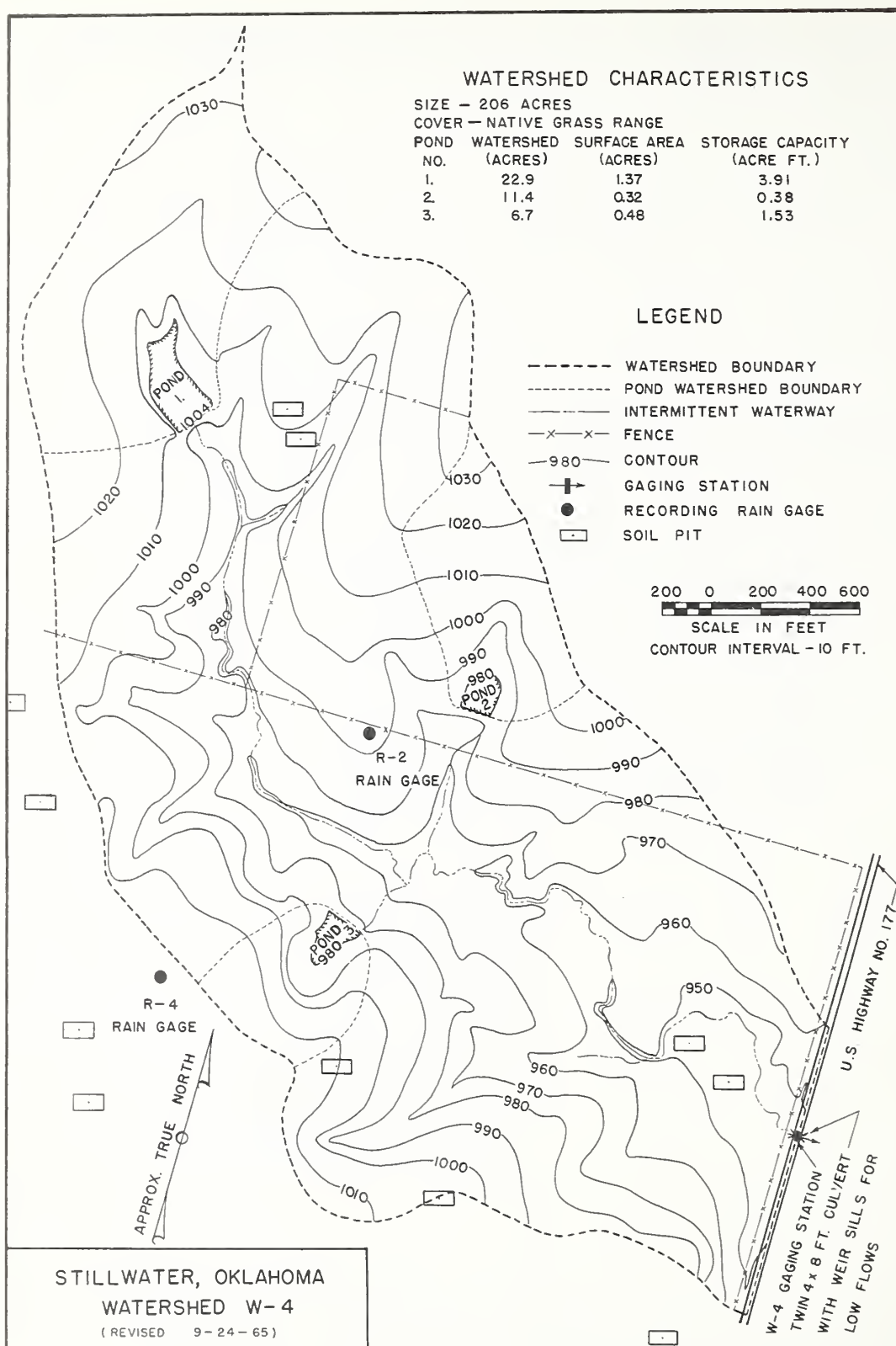
Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1964 SELECTED RUNOFF EVENT			STILLWATER, OKLAHOMA				WATERSHED W-3				37.2
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of May 10, 1964 - Continued											
							5-11	0123	.0134	.615	
								0248	.0085	.630	
								0410	.0057	.640	
								0640	.0030	.650	
								1016	.0014	.658	
								1500	.0006	.662	
								2400	.0004	.667	
							5-12	1200	.0003	.671	
								2400	.0003	.675	
							5-13	1200	.0003	.678	
								2400	.0002	.681	
							5-14	1200	.0001	.683	
								2400	.0001	.684	
							5-15	1026	.0000	.685	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 92.766 .



STILLWATER, OKLAHOMA WATERSHED W-3

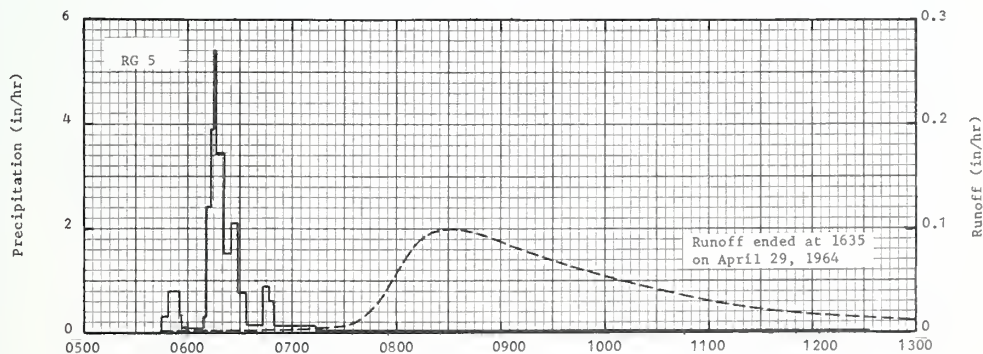


MONTHLY PRECIPITATION AND RUNOFF (inches)						STILLWATER, OKLAHOMA WATERSHED W-4 AREA - 206 ACRES								37.3		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P <u>1</u> / Q	.54 .00	1.30 .18	.77 .02	2.33 .47	5.06 .64	1.14 .00	1.15 .00	7.35 .24	2.54 .03	.90 .00	4.59 .48	.81 .08	28.48 2.14			
STA AV2/P (51-64) Q	.47 .08	1.05 .10	2.09 .42	2.13 .37	5.21 1.44	3.71 .87	4.22 .63	2.93 .09	3.39 .40	2.73 .63	1.58 .16	.99 .09	30.50 5.28			
MEAN P <u>3</u> / 71 YR	1.10	1.26	2.13	3.43	4.78	4.14	3.12	3.03	3.71	2.89	2.05	1.34	32.98			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.17	5-10	.15	5-10	.23	5-10	.31	5-10	.34	4-3	.38	4-3	.44	4-3	.45
MAXIMUMS FOR PERIOD OF RECORD																
1951 TO 1964	4-18 1957	2.39	4-18 1957	1.48	4-18 1957	1.75	10-2 1959	2.63	10-2 1959	4.49	10-2 1959	4.71	10-1 1959	5.23	9-30 1959	6.77
NOTES: Watershed conditions: All native grass cover, 17.3% of watershed area in hay meadow and 82.7% in pasture, and located in region (H-80) of the Central Rolling Red Prairies land resource area. The meadow portion produced only about half the normal hay crop, due to a deficit in rainfall accumulation of 7-inches up to harvesting time. An excess of 5-1/3 inches above average rainfall in August accelerated regrowth and restored a good cover. In general the pasture portion was over-grazed and the cover condition changed from fair to poor during the year. <u>1</u> / Precipitation data obtained from R-4 recording rain gage. <u>2</u> / Precipitation and runoff records began July 1951. <u>3</u> / Mean P based on 71-year (1893-1963) U. S. Weather Bureau record period at Stillwater, Oklahoma.																
NO SUITABLE SELECTED RUNOFF EVENT TO REPORT. FOR REVISED MAP OF WATERSHED, SEE PREVIOUS PAGE. FOR ORIGINAL MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 37.3-6.																

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED C		42.02						
						AREA — 579 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/2	3.04	2.10	2.03	3.86	.97	1.96	T	6.56	4.12	.92	3.43	1.11	30.10			
Q	.15	.06	.07	.32	.01	.00	.00	.20	.02	T	.11	T	.94			
STA AV 2/P	1.86	2.72	1.82	3.69	3.72	3.87	1.39	2.08	2.78	2.79	3.05	2.24	32.01			
(39-64) Q	.37	.48	.25	.86	.73	.63	.17	.03	.41	.31	.36	.51	5.11			
MEAN P 3/76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.10	4-26	.09	4-26	.16	4-26	.25	4-26	.29	4-26	.30	4-26	.30	4-25	.31
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1964 2/	4-19 1957	1.33E	4-19 1957	1.33E	4-19 1957	2.02E	4-23 1957	2.80	9-7 1942	3.06	9-7 1942	3.19	9-7 1942	4.78	4-19 1957	8.76E
Notes: Watershed land use: 70% pasture; 4% fall planted small grain, largely oats; 2% row grain crop, largely grain sorghum; 10% annual broadcast crops, largely forage sorghums; 2% corn; 2% gravel and paved roads; 10% other. Approx. 90% of "other" is Johnsongrass and weeds in conservation reserve, but neither tilled nor grazed. 1/ Precipitation data from Thiessen method using rain gages 5, 14, and 20. 2/ Precipitation and runoff records began Feb. 1938; station not in operation July 1943 to Mar. 1 1949; part-year amounts not included in averages. 3/ Mean P based on 76-yr (1889-1964) U.S. Weather Bureau record period at Waco, Texas. 4/ No maximums 1938, 1944-48; maximums for 1943 occurred before July, and for 1949 after Mar. 1.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Wilson clay loam	73	5/10	Weak fine granular	Slow	Weak coarse angular blocky	Very slow	60	Very slow	Very slow							
Burleson-Heiden clay	17	6/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	56	Very slow	Very slow							
Crockett loam	7	5/6	Weak fine granular	Slow	Moderate coarse angular blocky	Very slow	40	Very slow	Very slow							
Frio clay loam	3	6/6	Moderate fine granular	Rapid if dry, slow if wet	Moderate fine subangular blocky	Moderate	36	Moderate	Medium							
5/ These soils have well defined non-calcareous B horizons of heavy clay over calcareous parent material. 6/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED C		42.02						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 26-29, 1964																
4-05	3 RG 7/	.0018	4-26	RG	5		4-26	0544	.0001	.0000						
4-06	.00	.0003		0545	.00	.00		0618	.0001	T						
4-07	.00	T		0549	.30	.02		0628	.0006	.0001						
4-12	.09	.0000		0555	.80	.10		0638	.0012	.0008						
4-16	1.09	.0011		0557	.30	.11		0702	.0025	.0011						
4-17	T	.0014		0609	.05	.12		0728	.0052	.0028						
4-18	.00	.0004		0611	.30	.13		0734	.0080	.0034						
4-19	.00	T		0613	2.40	.21		0738	.0111	.0040						
4-21	.15	.0000		0615	3.90	.34		0744	.0185	.0055						
4-24	.12	.0000		0617	5.40	.52		0748	.0266	.0070						
4-25	.36	.0018		0621	3.45	.75		0752	.0360	.0090						
4-26	.00	5/0004		0625	1.50	.85		0756	.0470	.0119						
Watershed conditions: See next page				0629	2.10	.99		0800	.0586	.0154						
				0633	.75	1.04		0804	.0684	.0196						
				0643	.12	1.06		0810	.0833	.0272						
				0647	.90	1.12		0814	.0898	.0330						
				0649	.60	1.14		0818	.0940	.0391						
				0713	.12	1.19		0822	.0978	.0455						
				1233	.01	1.26		0826	.0993	.0521						
				RG	14	1.20		0830	.1000	.0587						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 583.82. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6. 7/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, and 20. 8/ RUNOFF PRIOR TO EVENT BEGINNING AT 0544.																

1964			SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS			WATERSHED C			42.02	
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNDFF (inches)	DATE MO-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME DF DAY	RATE (in/hr)	ACC. (inches)			
Event of April 26-29, 1964 - Continued													
Watershed conditions: 70% pas- ture, all classes; 4% oats and oats-clover, bloom stage; 2% row grain sorghum, 4 to 6 inches high; 10% sorghum hay, 4 to 6 inches high; 2% corn, 4 to 6 inches high; 2% farmsteads and gravel and paved roads; 10% other. Approximately 90% of "other" is Johnsongrass and weeds, 4 to 6 inches high, in conservation reserve, neither tilled nor grazed.			4-26	RG 3 RG	20 AVG 1/	1.45 1.25	4-26	0834 0844 0854 0904 0914 0924 0934 0944 0954 1004 1014 1024 1044 1104 1129 1149 1219 1239 1319 1359 1459 1729 2059 2400 0359 0859 1458 2400 0258 2400 1635	.0987 .0962 .0903 .0837 .0783 .0729 .0681 .0627 .0568 .0521 .0477 .0430 .0351 .0292 .0221 .0190 .0155 .0133 .0105 .0084 .0064 .0032 .0017 .0011 .0006 .0003 .0001 .0001 T T .0000	.0653 .0816 .0971 .1116 .1231 .1377 .1494 .1603 .1703 .1794 .1877 .1953 .2083 .2189 .2297 .2365 .2450 .2499 .2577 .2639 .2713 .2830 .2912 .2952 .2986 .3009 .3022 .3030 .3031 .3035 .3035			

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 583.82. $\frac{1}{2}$ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, and 20.

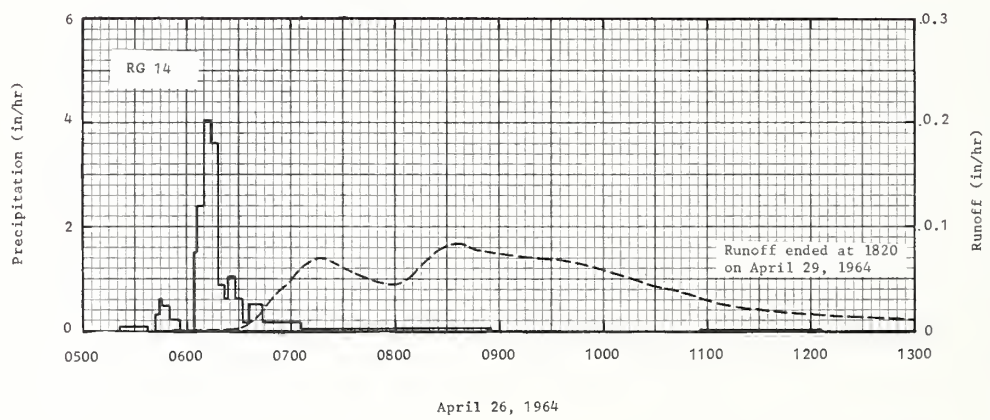


April 26, 1964

RIESEL (WACO), TEXAS WATERSHED C

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS AREA — 1,110 ACRES (1.73 SQ. MILES)						WATERSHED D		42.03		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ¹ / ₂	3.13	2.10	2.04	3.88	.75	1.93	T	6.65	4.15	.92	3.48	1.09	30.12		
	Q	.12	.03	.06	.33	T	.00	.00	.33	.03	.00	.12	T	1.02		
	STA AV ² / _P	1.97	2.72	1.92	3.68	3.63	3.93	1.47	1.97	2.70	2.62	2.95	2.25	31.81		
(38-64) Q		.42	.48	.27	.93	.84	.64	.19	.05	.38	.30	.34	.48	5.32		
MEAN P ² / ₇₆ YR		2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.22	8-23	.09	8-23	.17	4-26	.28	4-26	.31	4-26	.32	4-26	.33	4-26	.33
MAXIMUMS FOR PERIOD OF RECORD																
1938 to 1964 ¹ / ₂	4-19 1957	1.03E	4-19 1957	.90E	4-19 1957	1.77E	4-23 1957	3.43	4-23 1957	3.54	4-23 1957	3.72	4-23 1957	5.42	4-19 1957	9.66E
NOTES: Watershed land use: 47% pasture; 8% fall planted small grain, largely oats; 7% corn; 4% cotton; 2% row grain crop, largely grain sorghum; 13% annual forage crops, largely forage sorghum; 2% gravel and paved roads; 17% other. Approx. 85% of "other" is Johnsongrass and weeds, in conservation reserve, but neither tilled nor grazed. ¹ / ₂ Precipitation data from Thiessen method using rain gages 5, 14, 20, and 26A. ² / ₇₆ Precipitation and runoff records began Dec. 1937; station not in operation July 1943 to Mar. 1, 1949; part-year amounts not included in averages. ³ / ₇₆ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ⁴ / ₇₆ No maximums 1938, 1944-1948; maximums for 1943 occurred before July, and for 1949 after Mar. 1.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil			Substratum		Internal drainage						
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Wilson clay loam	66	5/10	Weak fine granular	Slow	Weak coarse angular blocky	Very slow	60	Very slow	Very slow							
Burleson-Heiden clay	24	6/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	56	Very slow	Very slow							
Frio clay loam	4	5/6	Moderate fine granular	Rapid if dry, slow if wet	Moderate fine subangular blocky	Moderate	40	Moderate	Medium							
Crockett loam	3	5/6	Weak fine granular	Slow	Moderate coarse angular blocky	Very slow	48	Very slow	Very slow							
Burleson clay	2	5/6	Weak fine crumb	Very slow	Weak fine crumb	Slow	50	Very slow	Very slow							
Houston Black clay	1	5/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	58	Very slow	Very slow							
5/ These soils have well defined non-calcareous B horizons of heavy clay over calcareous parent material. 6/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS						WATERSHED D		42.03		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
4 RG ² / ₇ Event of April 26-29, 1964																
4-05	.81	.0006	4-26	RG	14	.00	4-26	0552	.0000	.0000	T					
4-12	.08	.0000		0521	.00	.00		0624	.0003	.0000						
4-16	1.10	.0007		0536	.08	.02		0632	.0026	.0002						
4-17	T	.0037		0542	.00	.02		0634	.0045	.0003						
4-18	.00	.0002		0544	.30	.03		0638	.0101	.0008						
4-19	.00	T		0546	.60	.05		0640	.0135	.0012						
4-21	.14	.0000		0550	.45	.08		0642	.0163	.0017						
4-24	.14	.0000		0556	.20	.10		0646	.0245	.0029						
4-25	.31	.0000		0604	.00	.10		0652	.0357	.0061						
				0606	1.50	.15		0700	.0462	.0114						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 119.25. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6. ² / ₇ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, 20, AND 26A.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED D				42.03
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of April 26-29, 1964 - Continued											
Watershed conditions: 47% pasture, all classes; 8% oats and oats-clover, bloom stage; 7% corn, 4 to 6 inches high; 4% cotton, 2 leaf stage; 2% row grain sorghum, 4 to 6 inches high; 13% sor- ghum hay, 4 to 6 inches high; 2% farmsteads and gravel and paved roads; 17% other. Approximately 85% of "other" is Johnsongrass and weeds, 4 to 6 inches high, 1% conservation reserve, neither tilled nor grazed.			4-26	0610	2.40	.31	4-26	0706	.0608	.0168	
				0614	4.05	.58		0710	.0660	.0210	
				0618	3.60	.82		0716	.0700	.0278	
				0622	.90	.88		0720	.0686	.0325	
				0624	.60	.90		0726	.0644	.0391	
				0628	1.05	.97		0731	.0601	.0443	
				0632	.60	1.01		0741	.0523	.0537	
				0636	.15	1.02		0754	.0452	.0641	
				0644	.52	1.09		0758	.0452	.0671	
				0706	.16	1.15		0806	.0484	.0733	
				0856	.02	1.18		0810	.0536	.0767	
				1056	.00	1.18		0816	.0646	.0826	
				1206	.02	1.20		0820	.0708	.0872	
				RG	5	1.26		0826	.0783	.0947	
				RG	20	1.45		0830	.0815	.1000	
				RG	26A	1.61		0836	.0836	.1083	
				4 RG	AVG 1/	1.30		0840	.0836	.1139	
								0844	.0794	.1193	
								0848	.0776	.1245	
								0856	.0754	.1347	
								0906	.0730	.1470	
								0916	.0703	.1590	
								0926	.0683	.1705	
								0936	.0663	.1817	
								0946	.0639	.1926	
								0956	.0597	.2029	
								1006	.0556	.2125	
								1016	.0501	.2213	
								1026	.0454	.2293	
								1036	.0404	.2364	
								1046	.0360	.2428	
								1056	.0311	.2484	
								1106	.0268	.2532	
								1122	.0215	.2597	
								1130	.0199	.2624	
								1150	.0172	.2686	
								1210	.0151	.2740	
								1300	.0104	.2845	
								1400	.0074	.2933	
								1500	.0054	.2996	
								1800	.0025	.3108	
								2100	.0014	.3164	
								2400	.0008	.3196	
							4-27	0500	.0004	.3225	
								1200	.0002	.3243	
								2000	.0001	.3251	
								2400	.0000	.3253	
							4-28	2400		.3257	
							4-29	1820	.0000	.3257	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1119.25. 1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, 20, AND 26A.											

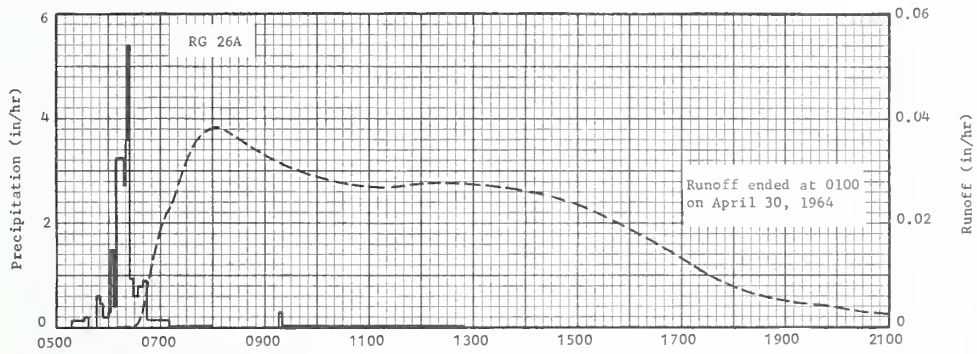


RIESEL (WACO), TEXAS WATERSHED D

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED G						42.04		
						AREA — 4,380 ACRES (6.84 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P $\frac{1}{Q}$	3.29	2.03	2.05	4.18	.59	1.86	.01	6.24	4.27	.99	3.46	1.06	30.03			
Q	.05	.01	.02	.32	.00	.00	.00	.10	.01	.00	.07	.00	.58			
STA AV $\frac{2}{P}$	2.24	2.86	1.64	3.27	2.83	5.28	1.67	2.50	2.80	2.81	3.04	2.62	33.56			
(38-64) Q	.69	.66	.19	.40	.33	1.09	.16	.06	.41	.19	.50	.58	5.26			
MEAN P $\frac{2}{76}$ VR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.04	4-26	.04	4-26	.07	4-26	.18	4-26	.29	4-26	.31	4-26	.32	4-26	.32
MAXIMUMS FOR PERIOD OF RECORD																
19 38 to 19 64 $\frac{2}{Q}$	11-22 1940	.42	11-22 1940	.40	11-22 1940	.72	11-22 1940	1.54	11-22 1940	1.94	11-22 1940	2.74	11-22 1940	4.18	11-22 1940	4.82
NOTES: Watershed land use: 30% pasture; 11% fall planted small grain, largely oats; 10% corn; 4% cotton; 3% row grain crops, largely grain sorghum; 8% annual forage crops, largely forage sorghums; 2% gravel and paved roads; 32% other. Approx. 70% of "other" is Johnsongrass and weeds in conservation reserve, but neither tilled nor grazed. $\frac{1}{2}$ Precipitation data from Thiessen method using rain gages 5, 14, 20, 26A, 30A, 43A, 48A, 56A, 65A, 70, 74A, 84A, and 89. $\frac{2}{2}$ Precipitation and runoff records began Jan. 1938; station not in operation July 1943 to July 1, 1957; part-year amounts not included in averages. $\frac{3}{3}$ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. $\frac{4}{4}$ No maximums 1944 through 1957; maximums for 1943 occurred before July 1.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per-cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme-ability	Structure	Perme-ability	Avg. depth to (in.)	Perme-ability								
Houston Black clay	42	$\frac{5}{6}$	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	58	Very slow	Very slow							
Wilson clay loam	29	$\frac{5}{10}$	Weak fine granular	slow	Weak coarse angular blocky	Very slow	60	Very slow	Very slow							
Burleson-Heiden clay	20	$\frac{5}{6}$	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	50	Very slow	Very slow							
Frio clay loam	3	$\frac{5}{6}$	Moderate fine granular	Rapid if dry, slow if wet	Moderate fine subangular blocky	Moderate	40	Moderate	Medium							
Heiden clay	2	$\frac{5}{6}$	Moderate fine granular	Rapid if dry, very slow, if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	38	Nearly impervious	Very slow							
Austin silty clay	2	$\frac{5}{6}$	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	30	Moderate	Medium							
Trinity clay	1	$\frac{5}{6}$	Strong fine crumb	Rapid if dry, slow if wet	Strong fine angular blocky	Rapid if dry, slow if wet	50	Very slow	Very slow							
Crockett loam	1	$\frac{5}{6}$	Weak fine granular	Slow	Moderate coarse angular blocky	Very slow	40	Very slow	Very slow							
$\frac{5}{5}$ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation. $\frac{6}{6}$ These soils have well defined non-calcareous B horizons of heavy clay over calcareous parent material.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS			WATERSHED G			42.04	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of April 26-30, 1964										
4-05	13 RG 1/ 0.80	0.0000	4-26	RG	2.6A	0.00	4-26	0609	0.0000	0.0000
4-12	0.07	0.0000		0516	0.00	0.00		0629	0.0001	0.0001
4-16	1.17	0.0000		0533	0.14	0.04		0639	0.0030	0.0002
4-17	T	T		0536	0.20	0.05		0644	0.0069	0.0006
4-18	0.00	T		0547	0.00	0.05		0649	0.0108	0.0013
4-19	0.00	T		0550	0.60	0.08		0654	0.0148	0.0024
4-21	0.06	0.0000		0554	0.45	0.11		0659	0.0175	0.0038
4-24	0.10	0.0000		0600	0.20	0.13		0704	0.0210	0.0054
4-25	0.40	0.0000		0602	0.30	0.14		0709	0.0226	0.0072
				0604	1.50	0.19		0714	0.0239	0.0091
				0607	0.40	0.21		0719	0.0265	0.0112
				0618	3.27	0.81		0724	0.0292	0.0135
				0620	2.70	0.90		0729	0.0315	0.0161
				0622	3.60	1.02		0734	0.0330	0.0188
				0624	5.40	1.20		0739	0.0347	0.0216
				0628	0.90	1.26		0744	0.0361	0.0245
				0634	0.60	1.32		0749	0.0371	0.0276
				0640	0.80	1.40		0754	0.0376	0.0307
				0646	0.90	1.49		0809	0.0385	0.0402
				0710	0.15	1.55		0824	0.0365	0.0496
				0800	0.02	1.57		0839	0.0349	0.0585
			0918	0.00	1.57		0854	0.0335	0.0670	
			0920	0.30	1.58		0909	0.0323	0.0753	
			1250	0.01	1.61		0924	0.0312	0.0832	
			RG	65A			0939	0.0300	0.0909	
			0511	0.00	0.00		0954	0.0289	0.0982	
			0527	0.08	0.02		1024	0.0277	0.1124	
			0537	0.20	0.04		1054	0.0272	0.1261	
			0547	0.00	0.04		1124	0.0271	0.1329	
			0549	0.60	0.06		1139	0.0271	0.1397	
			0551	0.90	0.09		1154	0.0279	0.1534	
			0553	0.30	0.10		1209	0.0279	0.1604	
			0601	0.08	0.11		1309	0.0274	0.1880	
			0605	0.30	0.13		1339	0.0268	0.2016	
			0607	0.90	0.16		1409	0.0259	0.2148	
			0610	2.80	0.30		1454	0.0240	0.2335	
			0615	2.64	0.52		1539	0.0210	0.2505	
			0623	0.60	0.60		1624	0.0170	0.2648	
			0627	0.30	0.62		1704	0.0128	0.2748	
			0637	3.84	1.26		1734	0.0098	0.2804	
			0639	2.70	1.35		1809	0.0075	0.2854	
			0647	1.58	1.56		1839	0.0059	0.2888	
			0707	0.15	1.61		1909	0.0049	0.2916	
			0727	0.06	1.63		1939	0.0042	0.2938	
			0757	0.02	1.64		2024	0.0033	0.2966	
			0857	0.01	1.65		2135	0.0025	0.3002	
			1057	0.00	1.65		2400	0.0016	0.3050	
			1157	0.02	1.67		0224	0.0011	0.3082	
			1227	0.08	1.71		0724	0.0006	0.3122	
			RG	5	1.26		1424	0.0003	0.3151	
			RG	14	1.20		1654	0.0002	0.3156	
			RG	20	1.45		2400	0.0001	0.3166	
			RG	30A	1.54		0724	T	0.3170	
			RG	43A	1.68		2400	T	0.3174	
			RG	48A	1.70		2400	T	0.3174	
			RG	56A	1.85		0100	0.0000	0.3174	
			RG	70	1.79					
			RG	74A	1.51					
			RG	84A	1.70					
			RG	89	1.66					
			13 RG	AVG 1/	1.58					
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4416.48. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6.										
1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, 20, 26A, 30A, 43A, 48A, 56A, 65A, 70, 74A, 84A AND 89.										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4416.48. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.4-6.
1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 5, 14, 20, 26A, 30A, 43A, 48A, 56A, 65A, 70, 74A, 84A AND 89.



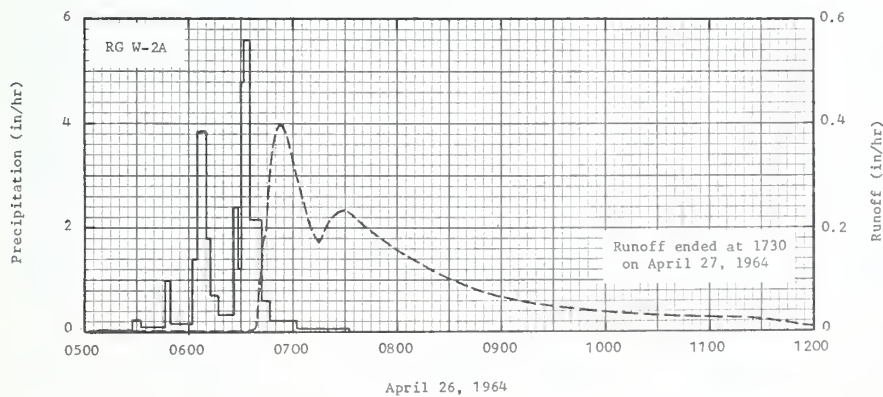
April 26, 1964

RIESEL (WACO), TEXAS WATERSHED G

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		AREA — 176 ACRES		WATERSHED W-1		42.06				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/2	3.20	2.12	2.12	4.55	.57	2.28	.10	5.90	4.76	1.22	3.57	1.00	31.39			
Q	.00	.00	.01	.54	T	.00	.00	.03	.02	.00	.06	T	.66			
STA AV 2/2 P	2.28	2.70	2.39	3.93	4.20	3.53	1.55	1.86	2.29	2.57	2.95	2.60	32.85			
(38-64) Q	.48	.59	.51	.97	1.15	.60	.10	.02	.15	.21	.40	.49	5.67			
MEAN P 2/2 76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.40	4-26	.25	4-26	.39	4-26	.52	4-26	.53	4-26	.53	4-25	.54	4-20	.54
MAXIMUMS FOR PERIOD OF RECORD																
19 37 TO 19 64 2/2	5-1 1944	4.51	5-1 1944	2.99	5-1 1944	5.57	5-1 1944	6.91	5-1 1944	6.92	5-1 1944	7.05	4-30 1944	9.20	4-29 1944	11.06
NOTES: Watershed land use: 31% cotton; 6% corn; 20% oats; 13% row grain sorghum; 16% pasture; 3% native grass for hay; 3% gravel roads; 6% tilled, no crop; 2% farmstead and waterways. Straight row cultivation; without terraces. 1/2 Precipitation data from Thiessen method using rain gages 75A, 89, W-2, W-2A, and W-5A. 2/2 Precipitation and runoff records began July 1937; part-year amounts not included in averages. 3/2 Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. 4/2 No maximums for 1937.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	67	5/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	55	Very slow	Very slow							
Heiden clay	33	5/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine Angular blocky	Rapid if dry, very slow if wet	47	Nearly impervious	Very slow							
5/2 Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED W-1		42.06						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 26-27, 1964																
3-26	.00	T	4-26	RG	W-2A		4-26	0502	T	.0000						
3-27	.00	T		0507	.00	.00		0549	T							
3-28	.00	.0001		0527	.03	.01		0609	.0003	.0001						
3-29	.00	T		0532	.24	.03		0613	.0008	.0001						
4-03	.00	.0001		0546	.09	.05		0616	.0017	.0002						
4-04	.00	T		0549	1.00	.10		0621	.0023	.0004						
4-05	.91	.0015		0602	.14	.13		0623	.0023	.0004						
4-06	.00	.0001		0605	1.40	.20		0630	.0020	.0007						
4-07	.00	T		0610	3.84	.52		0634	.0025	.0008						
4-12	.01	.0000		0612	1.80	.58		0637	.0048	.0010						
4-16	1.08	.0009		0617	.72	.64		0638	.0139	.0012						
4-17	T	.0002		0626	.33	.69		0639	.0372	.0016						
4-18	.00	.0001		0628	2.40	.77		0640	.0699	.0025						
4-19	.00	T		0630	1.20	.81		0641	.1464	.0043						
4-20	.00	T		0632	4.80	.97		0642	.1708	.0069						
4-21	T	T		0635	5.60	1.25		0643	.1965	.0100						
4-22	.00	T		0642	2.14	1.50		0645	.2296	.0173						
4-23	.00	T		0647	.60	1.55		0647	.3297	.0270						
4-24	.01	.0000		0702	.20	1.60		0649	.3695	.0387						
4-25	.88	.0060		0732	.06	1.63		0651	.3953	.0514						
4-26	.00	2/2 T		RG	75A	1.81		0652	.3999	.0581						
Watershed conditions: See next page.				RG	89	1.66		0654	.3947	.0713						
				RG	W-2	1.69		0658	.3439	.0959						
				RG	W-5A	1.68		0701	.3041	.1121						
				5 RC	AVG 6/	1.66		0704	.2646	.1264						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 177.47. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, P. 42.6-6 (REVISED). 6/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 75A, 89, W-2, W-2A AND W-5A. 7/ RUNOFF PRIOR TO EVENT BEGINNING AT 0502.																

1964			SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS		WATERSHED W-1		42.06	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of April 26-27, 1964 - Continued											
Watershed conditions: 31% cotton, 2 leaf stage; 6% corn, 4 to 6 inches high; 20% oats, bloom stage; 13% row grain sorghum, 4 to 6 inches high; 16% pasture, bermudagrass and weeds, good cover; 3% native grass meadow, dense growth, 10 inches high; 6% no crops, listed; 5% farmsteads and gravel roads and waterways. Straight row cultivation, not terraced.							4-26	0707	.2268	.1356	
							0709	.2023	.1458		
							0714	.1712	.1614		
							0715	.1716	.1642		
							0719	.2014	.1766		
							0724	.2268	.1945		
							0729	.2339	.2137		
							0734	.2221	.2327		
							0739	.2041	.2504		
							0749	.1815	.2826		
							0759	.1578	.3108		
							0804	.1480	.3236		
							0814	.1292	.3467		
							0824	.1113	.3667		
							0834	.0955	.3840		
							0844	.0828	.3988		
							0904	.0633	.4232		
							0924	.0515	.4423		
							0959	.0378	.4684		
							1034	.0297	.4881		
							1118	.0243	.5079		
							1157	.0053	.5175		
							1230	.0043	.5202		
							1345	.0025	.5244		
							1545	.0011	.5279		
							1715	.0006	.5292		
							1915	.0003	.5301		
							2145	.0002	.5307		
2400	.0001	.5310									
4-27	0545	T	.5314								
1730	.0000	.5316									

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 177.47.



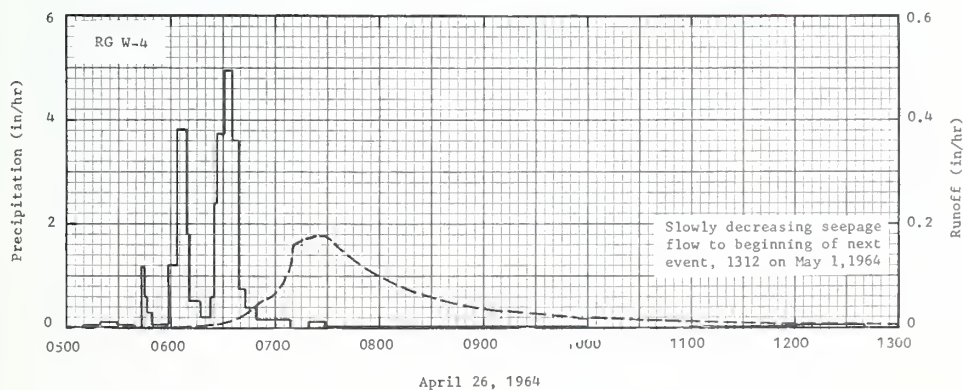
RIESEL (WACO), TEXAS WATERSHED W-1

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS					WATERSHED W-2					42.07
						AREA — 130 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ² / ₂	3.11	2.11	2.15	4.63	.62	2.37	.12	6.04	4.61	1.26	3.55	.96	31.53			
Q	.00		.04	.35	.04	.01	.00	.00	.00	.00	.06	.09	.59			
STA AV ² / ₂ /P	2.23	2.69	2.33	3.91	4.13	3.48	1.55	1.90	2.32	2.55	2.90	2.58	32.57			
(38-64) Q	.55	.68	.58	.95	1.15	.54	.10	.01	.12	.19	.39	.58	5.84			
MEAN P ² / ₂ /76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.18	4-26	.14	4-26	.20	4-26	.26	4-26	.27	4-26	.27	4-25	.29	4-20	.30
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO 1964	5-1	4.83	5-1	2.86	5-1	5.40	5-1	6.91	5-1	6.97	5-1	7.12	4-30	9.26	4-29	10.96
NOTES: Watershed land use: 17% oats-clover; 14% row grain sorghum; 4% broadcast sorghum hay; 49% pasture; 7% native grass hay; 3% Johnsongrass, not tilled or grazed; 1% waterway; 5% gravel roads. Cropland farmed on contour, not terraced. Modified conservation applied 1956. ² / ₂ Precipitation data from Thiessen method using rain gages W-2, W-4, W-5A, and W-6. ² / ₂ Precipitation and runoff records began July 1937; part-year amounts not included in averages. ² / ₂ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ² / ₂ No maximums for 1937.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per-cent of area	Topsoil			Subsoil			Substratum		Internal drainage						
		Avg. depth (in.)	Structure	Perme-ability	Structure	Perme-ability	Avg. depth to (in.)	Perme-ability								
Houston Black clay	86	⁵ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	51	Very slow	Very slow							
Heiden clay	14	⁵ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	46	Nearly impervious	Very slow							
⁵ / ₆ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS					WATERSHED W-2					42.07
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
4 RG 6/			Event of April 26-May 1, 1964													
3-27	.00	.0009	4-26	RG	W-4		4-26	0500	.0002	.0000						
3-28	.00	.0010		0509	.00	.00		0530	.0002	.0001						
3-29	.00	.0007		0519	.06	.01		0609	.0009	.0004						
3-30	.00	.0008		0529	.12	.03		0626	.0052	.0012						
3-31	.00	.0007		0539	.06	.04		0634	.0106	.0022						
4-01	.00	.0012		0543	.00	.04		0640	.0188	.0037						
4-02	.00	.0016		0545	1.20	.08		0645	.0292	.0056						
4-03	.00	.0012		0547	.60	.10		0651	.0470	.0094						
4-04	.00	.0018		0549	.30	.11		0655	.0570	.0130						
4-05	.91	.0125		0559	.06	.12		0701	.0752	.0194						
4-06	.00	.0021		0604	1.20	.22		0706	.0925	.0262						
4-07	.00	.0013		0609	3.84	.54		0708	.1188	.0297						
4-08	.00	.0005		0611	1.80	.60		0710	.1483	.0343						
4-09	.00	.0007		0617	.50	.65		0712	.1617	.0394						
4-10	.00	.0009		0623	.20	.67		0715	.1698	.0477						
4-11	.00	.0015		0625	.60	.69		0720	.1737	.0620						
4-12	.01	.0017		0627	2.40	.77		0725	.1782	.0767						
4-13	.00	.0009		0631	3.75	1.02		0728	.1782	.0856						
4-14	.00	.0003		0635	4.95	1.35		0730	.1728	.0915						
4-15	.00	.0001		0639	3.60	1.59		0735	.1592	.1053						
4-16	1.01	.0079		0643	.75	1.64		0740	.1414	.1178						
4-17	T	.0058		0649	.40	1.68		0745	.1283	.1291						
4-18	.00	.0021		0709	.15	1.73		0750	.1152	.1392						
4-19	.00	.0010		0719	.00	1.73		0755	.1046	.1484						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO GFS, MULTIPLY BY 131.08. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES. 1963, USDA MISG. PUB. 1164, P. 42.7-5 (REVISED). ⁶ / ₆ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES W-2, W-4, W-5A AND W-6.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS			WATERSHED W-2			42.07
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of April 26-May 1, 1964 - Continued									
4-20	4 RG 1/ 0.00	0.0012	4-26	0729	0.12	1.75	4-26	0800	0.0972
4-21	T	0.0015		0959	0.01	1.78		0805	0.0879
4-22	0.00	0.0018		1059	0.00	1.78		0815	0.0722
4-23	0.00	0.0017		1241	0.01	1.80		0830	0.0576
4-24	T	0.0013		RG	W-2	1.69		0840	0.0484
4-25	0.98	0.0146		RG	W-5A	1.68		0850	0.0417
4-26	0.00	2/ 0.0010		RG	W-6	1.64		0900	0.0361
				4 RG	AVG 1/ 1.72	1.72		0910	0.0304
								0930	0.0232
								0940	0.0204
								1000	0.0164
								1030	0.0121
								1045	0.0101
								1115	0.0075
								1200	0.0054
								1312	0.0026
								1512	0.0011
								1742	0.0005
								2400	0.0003
							4-27	0542	0.0002
								1142	0.0001
								1642	T
								2400	0.0001
							4-28	0942	0.0001
								2400	T
							4-29	0342	0.0001
								1542	T
								2400	0.0001
							4-30	2400	0.0001
							5-01	1312	3/ 0.0001

Watershed conditions: 17% oats-clover, bloom stage; 14% row grain sorghum, 4 to 6 inches high; 4% sorghum hay, 4 to 6 inches high; 49% pasture, bermudagrass and weeds, good cover; 7% native grass meadow, dense growth, 10 inches high; 3% Johnsongrass and weeds, 4 to 6 inches high, in conservation reserve, neither tilled nor grazed; 6% gravel roads and waterways. Cropland farmed on contour, not terraced.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 131.08. 1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES W-2, W-4, W-5A, and W-6. 2/ RUNOFF PRIOR TO EVENT BEGINNING AT 0500. 3/ BEGINNING OF NEXT EVENT.

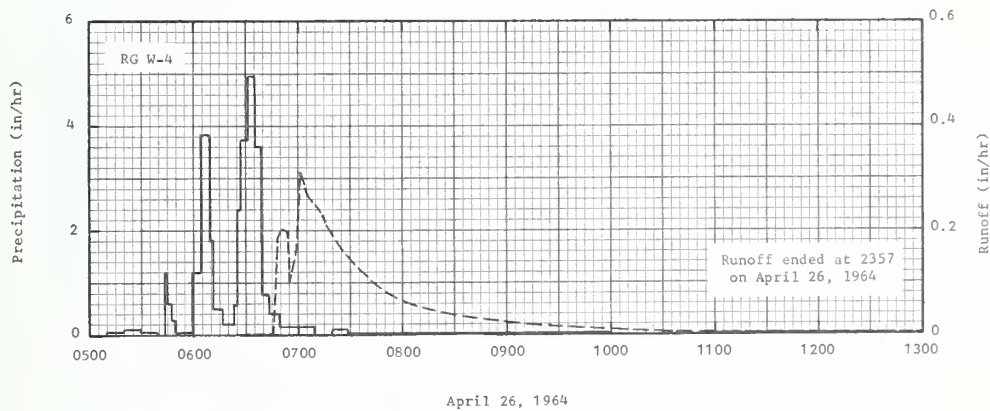


RIESEL (WACO), TEXAS WATERSHED W-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED W-6		42.08						
						AREA — 42.3 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/2	3.20	2.05	2.09	4.62	.63	2.39	.12	6.06	4.70	1.27	3.42	.96	31.51			
Q	.00	.00	.00	.26	.00	.00	.00	.00	.00	.00	T	.00	.26			
STA AV 2/2/P	2.04	2.60	2.14	3.97	3.76	3.71	1.44	1.96	2.44	2.75	2.92	2.39	32.12			
(40-64) Q	.31	.37	.28	.66	.72	.48	.07	T	.11	.13	.32	.38	3.83			
MEAN P 3/2/ 16 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.31	4-26	.18	4-26	.23	4-26	.26	4-26	.26	4-26	.26	4-26	.26	4-26	.26
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-10 1941	3.99	4-19 1957	2.33	4-19 1957	2.78	5-11 1957	3.13	5-11 1957	3.21	5-11 1957	3.23	11-22 1940	5.09	4-19 1957	9.06
Notes: Watershed land use: 41% row grain sorghum; 25% oats-clover; 13% pasture; 2% native grass bay; 9% Johnsongrass and weeds not tilled or grazed; 3% waterway; 7% gravel roads. Modified conservation program since 1956. Cropland farmed on contour, no terraces. 1/ Precipitation data from Thiessen method using rain gages W-2, W-4, W-5A and W-6. 2/ Precipitation and runoff records began May 1939; station not in operation July 1943 to Jan. 1, 1946; part-year amounts not included in averages. 3/ Mean P based on 76-yr (1889-1964) U.S. Weather Bureau record period at Waco, Tex. 4/ Maximums for 1939 occurred after May 1, and for 1943 before July; no maximums for 1944 and 1945.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage							
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	99	5/3	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow							
Heiden clay	1	5/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	48	Nearly impervious	Very slow							
5/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED W-6		42.08						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 26, 1964																
4-05	.87	.0000	4-26	RG	W-4		4-26	0625	.0000	.0000	T					
4-12	.01	.0000		0509	.00	.00		0642	.0001	.0001						
4-16	1.06	.0000		0519	.06	.01		0646	.0013	.0001						
4-17	T	.0000		0529	.12	.03		0647	.0486	.0005						
4-21	T	.0000		0539	.06	.04		0648	.1856	.0024						
4-24	T	.0000		0543	.00	.04		0649	.1941	.0056						
4-25	.90	.0000		0545	1.20	.08		0651	.2013	.0122						
				0547	.60	.10		0653	.1973	.0188						
				0549	.30	.11		0654	.1714	.0219						
				0559	.06	.12		0655	.1025	.0242						
				0604	1.20	.22		0656	.1126	.0260						
				0609	3.84	.54		0657	.1282	.0280						
				0611	1.80	.60		0658	.1458	.0303						
				0617	.50	.65		0659	.1565	.0328						
				0623	.20	.67		0700	.2436	.0361						
				0625	.60	.69		0701	.3114	.0407						
				0627	2.40	.77		0703	.2893	.0507						
				0631	3.75	1.02		0705	.2682	.0600						
				0635	4.95	1.35		0708	.2548	.0731						
				0639	3.60	1.59		0713	.2310	.0934						
				0643	.75	1.64		0718	.1965	.1112						
				0649	.40	1.68		0723	.1721	.1265						
				0709	.15	1.73		0728	.1504	.1400						
				0719	.00	1.73		0733	.1319	.1517						
				0729	.12	1.75		0738	.1166	.1621						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 42.652. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, P. 42.7-5 (REVISED). 6/ THIENSEN WEIGHTED RAINFALL USING RAIN GAGES W-2, W-4 AND W-5A.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED W-6				42.08
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of April 26, 1964 - Continued											
			4-26	0959	.01	1.78	4-26	0743	.1014	.1712	
				1059	.00	1.78		0748	.0858	.1790	
				1241	.01	1.80		0753	.0764	.1857	
				RG	W-2	1.69		0758	.0686	.1918	
				RG	W-5A	1.68		0803	.0609	.1972	
			3 RG	AVG 1/	1.79			0813	.0498	.2064	
								0823	.0407	.2139	
								0833	.0343	.2202	
								0843	.0293	.2255	
								0853	.0247	.2300	
								0903	.0212	.2338	
								0913	.0182	.2371	
								0933	.0138	.2425	
								0953	.0101	.2464	
								1013	.0076	.2493	
								1033	.0054	.2515	
								1133	.0028	.2554	
								1233	.0012	.2574	
								1430	.0005	.2586	
								1500	.0002	.2590	
								1600	.0001	.2592	
								1800	T	.2592	
								2357	.0000	.2593	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 42.652. $\frac{2}{3}$ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES W-2, W-4, AND W-5A.



RIESEL (WACO), TEXAS WATERSHED W-6

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS WATERSHED W-10 42.10								
						AREA — 19.7 ACRES								
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964	P ¹ / ₂	3.03	2.09	2.25	4.61	.63	2.36	.14	6.07	4.60	1.27	3.66	.97	31.68
	Q ² / ₃	T	T	T	.43	.00	.00	.00	.00	T	.08			.51
	STA AV ² / ₃ /P	2.05	2.65	2.01	3.87	3.63	3.63	1.42	1.99	2.34	2.78	2.88	2.39	31.64
	(39-64) Q	.44	.42	.26	.77	.74	.58	.08	.01	.20	.28	.43	.44	4.65
	MEAN P ² / ₃ /76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.38	4-26	.28	4-26	.36	4-26	.41	4-26	.42	4-26	.43	4-26	.43	4-26	.43

MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1964 ² / ₃	6-10 1941	5.01	4-19 1957	2.31	4-19 1957	2.55	5-11 1957	3.00	11-22 1940	3.33E	11-22 1940	3.53E	11-22 1940	4.94E	5-19 1957	8.29

NOTES: Watershed land use: 100% Coastal Bermudagrass for pasture. Grass sprigged in 1963 with poor coverage until late spring of 1964. Good cover after June 1964; lightly grazed. Watershed terraced. ¹/₂ Precipitation data obtained from rain gage W-6. ²/₃ Precipitation and runoff records began August 1938; station not in operation July 1943 to May 3, 1946; part-year amounts not included in averages. ³/₄ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ⁵/₆ Maximums for 1943 occurred before July, and for 1946 after May 3; no maximums for 1938, 1944, and 1945.

SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.

Soil	Per-cent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Perme-ability	Structure	Perme-ability	Avg. depth to (in.)	Perme-ability	
Houston Black clay	100 ⁵ / ₆	5/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	53	Very slow	Very slow

⁵/₆ Actually the plow layer: these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.

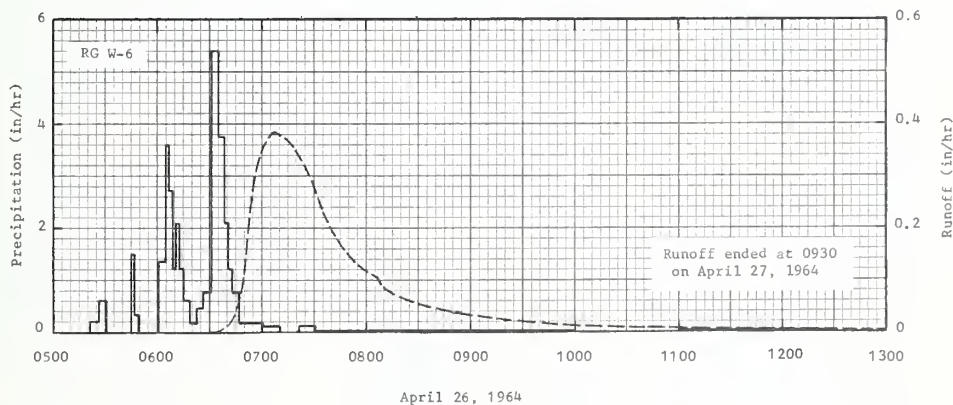
1964 SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS WATERSHED W-10 42.10						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
	RG W-6		Event of April 26-27, 1964							
4-05	.94	.0000	4-26	RG	W-6		4-26	0631	.0000	.0000
4-12	T	.0000		0521	.00	.00		0636	.0021	.0021
4-16	.97	.0000		0527	.20	.02		0638	.0053	.0002
4-17	T	.0000		0531	.60	.06		0641	.0125	.0006
4-21	T	.0000		0545	.00	.06		0643	.0219	.0012
4-24	T	.0000		0547	1.50	.11		0645	.0358	.0021
4-25	1.06	.0000		0549	.30	.12		0646	.0453	.0028
				0601	.00	.12		0647	.0663	.0037
				0605	1.35	.21		0648	.0856	.0050
				0607	3.60	.33		0649	.0942	.0065
Watershed conditions: 100% pasture, Coastal Bermudagrass, 4 inches high, poor cover, watershed terraced.				0609	2.70	.42	0650	.1138	.0082	
				0611	1.20	.46	0651	.1425	.0103	
				0613	2.10	.53	0652	.1737	.0130	
				0615	1.20	.57	0653	.2189	.0162	
				0619	.60	.61	0654	.2550	.0202	
				0623	.15	.62	0655	.2699	.0246	
				0627	.45	.65	0656	.2934	.0293	
				0631	.75	.70	0658	.3267	.0396	
				0635	5.40	1.06	0703	.3718	.0687	
				0639	3.75	1.31	0706	.3844	.0876	
				0641	2.10	1.38	0708	.3812	.1004	
				0643	1.20	1.42	0713	.3749	.1319	
				0647	.75	1.47	0718	.3503	.1621	
				0701	.17	1.51	0723	.3267	.1903	
				0711	.12	1.53	0728	.2894	.2160	

Continued on next page

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.864. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, P. 42.7-5 (REVISED).

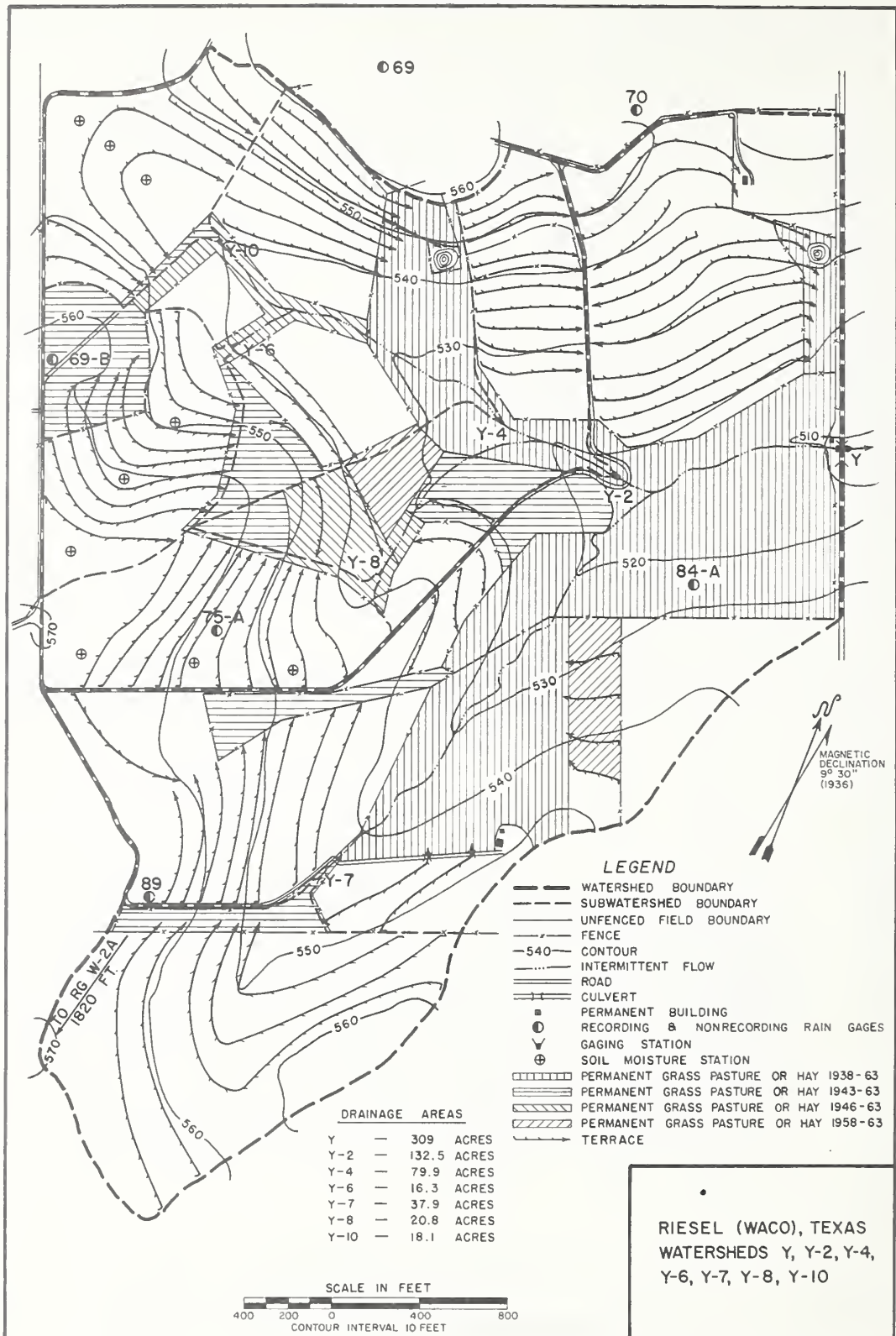
1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED W-10 42.10			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			Event of April 26-27, 1964—Continued							
			4-26	RG	W-6		4-26			
				0721	•00	1.53		0733	•2489	•2384
				0731	•12	1.55		0738	•2059	•2573
				1001	•01	1.58		0743	•1766	•2733
				1101	•00	1.58		0748	•1528	•2870
				1231	•04	1.64		0753	•1352	•2990
								0758	•1219	•3097
								0803	•1075	•3193
								0807	•1020	•3263
								0808	•0936	•3279
								0817	•0786	•3408
								0819	•0673	•3432
								0823	•0638	•3476
								0828	•0586	•3527
								0833	•0502	•3572
								0838	•0453	•3612
								0847	•0407	•3677
								0849	•0348	•3689
								0903	•0289	•3763
								0908	•0253	•3786
								0923	•0217	•3845
								0931	•0194	•3872
								0943	•0156	•3905
								0951	•0124	•3924
								1001	•0097	•3943
								1108	•0049	•4024
								1202	•0026	•4057
							4-27	2400	•0013	•4288
								0930	•0000	•4350

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 19.864.



RIESEL (WACO), TEXAS WATERSHED W-10

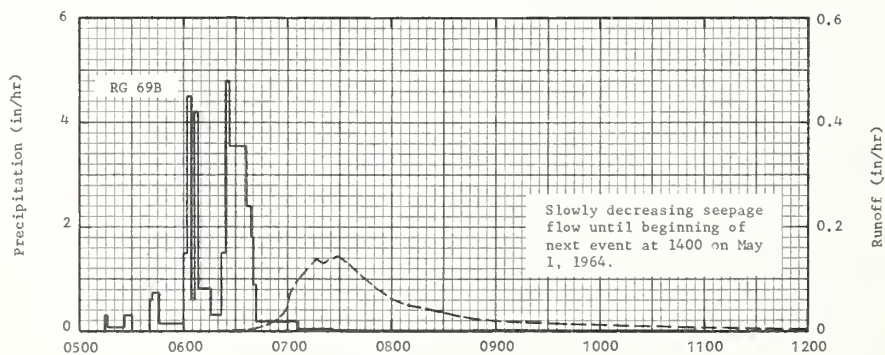
REVISION OF PREVIOUSLY PUBLISHED MAP



MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		AREA — 309 ACRES		WATERSHED Y		42.11				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	3.27 .00	2.08 .00	2.09 T	4.58 .19	.61 T	2.26 .00	.06 .00	5.87 T	4.79 T	1.06 .00	3.60 .02	1.03 T	31.30 .21			
STA AV 2/ (38-64) Q	2.18 .48	2.57 .46	2.05 .28	3.85 .70	3.66 .61	3.74 .50	1.44 .08	1.79 T	2.22 .11	2.60 .11	2.74 .34	2.34 .34	31.18 4.01			
MEAN P 3/ 76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	4-26	.14	4-26	.11	4-26	.15	4-26	.18	4-26	.18	4-26	.18	4-26	.18	4-20	.18
MAXIMUMS FOR PERIOD OF RECORD																
1937 TO 1964	4-19 1957	2.54E	4-19 1957	2.15E	4-19 1957	2.74E	4-19 1957	3.48E	4-19 1957	3.66E	4-19 1957	3.70E	11-22 1940	4.77	4-19 1957	9.36E
NOTES: Watershed land use: 36% pasture; 25% oats-clover; 14% cotton; 13% row grain sorghum; 8% corn; 3% tilled, no crop; 1% gravel roads. Cropland terraced, contour cultivation. No changes in conservation practices. 1/ Precipitation data from Thiessen method using rain gages 69, 69B, 70, 75A, 84A, 89, and W-2A. 2/ Precipitation and runoff records began May 1937; station not in operation July 1943 to May 1, 1946; part-year amounts not included in averages. 3/ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. 4/ Maximums for 1943 occurred before July, and for 1946 after May 1; no maximums for 1937, 1944, and 1945.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	66	5/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	57	Very slow	Very slow							
Heiden clay	23	5/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	47	Nearly impervious	Very slow							
Austin silty clay	10	5/ 6	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	27	Moderate	Medium							
Trinity clay	1	5/ 6	Strong fine crumb	Rapid if dry, slow if wet	Strong fine angular blocky	Rapid if dry, slow if wet	50	Very slow	Very slow							
5/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED Y		42.11						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
7 RG 6/ Event of April 26-May 1, 1964																
3-27	.00	T	4-26	RG	69B		4-26	0620		.0000						
3-28	.00	T		0514	.00	.00		0635	.0005	T						
4-05	.86	.0001		0516	.30	.01		0638	.0021	.0001						
4-06	.00	T		0526	.06	.02		0646	.0074	.0007						
4-12	.03	.0000		0530	.30	.04		0653	.0209	.0025						
4-16	1.18	.0001		0540	.00	.04		0657	.0347	.0043						
4-17	.01	T		0542	.60	.06		0700	.0540	.0064						
4-18	.00	T		0546	.75	.11		0703	.0855	.0100						
4-19	.00	T		0600	.13	.14		0708	.1036	.0179						
4-20	.00	T		0602	1.50	.19		0713	.1274	.0275						
4-21	T	T		0604	4.50	.34		0716	.1291	.0342						
4-22	.00	T		0606	.60	.36		0718	.1345	.0387						
4-23	.00	T		0608	4.20	.50		0720	.1315	.0432						
4-24	.03	T		0616	.82	.61		0722	.1336	.0476						
4-25	.71	.0001		0622	.30	.64		0724	.1372	.0521						
Continued on next page																
NOTES: TO CONVERT RUNOFF 1N IN/HR TO CFS, MULTIPLY BY 311.57. FOR MAP OF WATERSHED SEE PREVIOUS PAGE 42.11-5 (REVISED). 6/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 69B, 70, 75A, 84A, 89, AND W-2A.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y			42.11
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of April 26-May 1, 1964 - Continued										
4-26	.00	^{2/} T	4-26	0624	1.50	.69	4-26	0729	.1428	.0638
				0626	4.80	.85		0734	.1315	.0752
				0636	3.54	1.44		0739	.1190	.0856
				0638	2.40	1.52		0744	.1039	.0949
				0640	1.80	1.58		0749	.0903	.1030
				0642	.90	1.61		0753	.0777	.1086
				0706	.18	1.68		0758	.0663	.1146
				0726	.03	1.69		0803	.0586	.1198
				1056	.01	1.72		0808	.0511	.1244
				1246	T	1.73		0818	.0450	.1325
			4-26	RG	8.4A			0828	.0376	.1394
				0452	.00	.00		0838	.0293	.1449
				0512	.06	.02		0848	.0238	.1493
				0526	.00	.02		0858	.0199	.1529
				0534	.22	.05		0918	.0150	.1587
				0546	.00	.05		0958	.0099	.1668
				0550	.90	.11		1108	.0048	.1751
				0552	.30	.12		1230	.0024	.1796
				0604	.10	.14		1400	.0012	.1822
				0607	1.40	.21		1510	.0006	.1832
				0610	3.80	.40		1620	.0003	.1837
				0614	2.40	.56		1720	.0002	.1840
				0618	.60	.60		2100	.0001	.1845
				0626	.38	.65		2400	T	.1847
				0628	1.20	.69	4-27	2400	T	.1848
				0630	5.40	.87	4-28	2400	T	.1848
				0632	2.10	.94	4-29	2400	T	.1848
				0634	3.90	1.07	4-30	2400	T	.1848
				0636	6.00	1.27	5-01	1400	^{2/} T	.1848
				0638	3.30	1.38				
				0644	1.60	1.54				
				0646	.30	1.55				
				0712	.16	1.62				
				0722	.00	1.62				
				0732	.12	1.64				
				0902	.01	1.65				
				1102	.00	1.65				
				1302	.02	1.70				
				RG	.69	1.94				
				RG	.70	1.79				
				RG	.75A	1.81				
				RG	.89	1.66				
				RG	W-2A	1.63				
				7 RG	AVG 1/	1.75				

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 311.57. ^{1/} THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 69B, 70, 75A, 84A, 89, and W-2A. ^{2/} RUNOFF PRIOR TO EVENT BEGINNING AT 0620. ^{3/} BEGINNING OF NEXT EVENT.

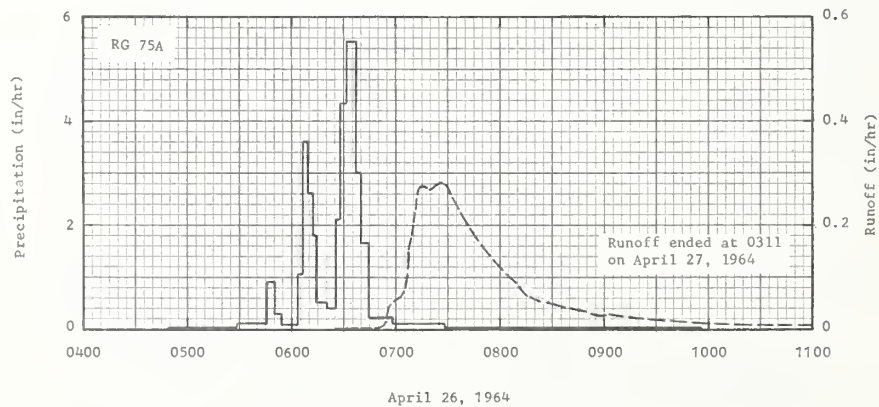


April 26, 1964
RIESEL (WACO), TEXAS WATERSHED Y

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS				WATERSHED Y-2				42.12		
						AREA — 132 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ² / _Q	3.30	2.08	2.11	4.62	.65	2.28	.04	5.88	4.94	1.06	3.54	1.04	31.54			
Q	.00	.00	T	.29	.00	.00	.00	.00	.00	.00	T	.00	.29			
STA AV P	2.19	2.63	2.38	3.92	4.30	3.60	1.51	1.86	2.38	2.58	2.95	2.52	32.82			
(39-64)Q	.43	.54	.52	.87	1.06	.51	.07	T	.10	.14	.35	.48	5.07			
MEAN P ² / _{76 YR}	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.28	4-26	.21	4-26	.26	4-26	.29	4-26	.29	4-26	.29	4-26	.29	4-26	.29
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	5-1 1944	4.07	5-1 1944	3.11	5-1 1944	5.47	5-1 1944	7.08	5-1 1944	7.28	5-1 1944	7.46	4-30 1944	9.64	4-29 1944	10.60
NOTES: Watershed land use: 33% pasture; 29% oats-clover; 19% cotton; 18% row grain sorghum; 1% gravel roads. Cropland terraced; contour cultivation; conservation treatment since 1942. ¹ / _{Precipitation data from Thiessen method using rain gages 69, 69B, 70, 75A, and 84A. ²/_{Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas.}}																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl																
Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	74	³ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	58	Very slow	Very slow							
Austin silty clay	15	³ / ₆	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	26	Moderate	Medium							
Heiden clay	10	³ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	36	Nearly impervious	Very slow							
Trinity clay	1	³ / ₆	Strong fine crumb	Rapid if dry, slow if wet	Strong fine angular blocky	Rapid if dry, slow if wet	50	Very slow	Very slow							
³ / _{Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.}																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS				WATERSHED Y-2				42.12		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 26-27, 1964																
4-05	.84	.0000	4-26	RG	75A		4-26	0625	.0000	.0000						
4-12	.04	.0000		0448	.00	.00		0639	.0011	.0001						
4-16	1.19	.0000		0528	.03	.02		0641	.0011	.0001						
4-17	.02	.0000		0546	.10	.05		0642	.0008	.0001						
4-21	.01	.0000		0550	.90	.11		0648	.0026	.0003						
4-24	.04	.0000		0554	.30	.13		0653	.0104	.0008						
4-25	.67	.0000		0603	.07	.14		0655	.0255	.0014						
Watershed conditions: See next page.				0607	1.05	.21		0657	.0475	.0026						
				0609	3.60	.33		0659	.0558	.0044						
				0612	2.60	.46		0700	.0585	.0053						
				0614	1.80	.52		0703	.0633	.0084						
				0620	.50	.57		0705	.0840	.0108						
				0626	.40	.61		0706	.0996	.0123						
				0628	2.10	.68		0707	.1482	.0144						
				0632	4.35	.97		0708	.1674	.0170						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 133.10. FOR MAP OF THE WATERSHED, SEE PAGE 42.11-5 (REVISION), THIS PUBLICATION. ⁴ / _{THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 69B, 70, 75A, AND 85A.}																

1964			SELECTED RUNOFF EVENT				RIESEL (WACO) • TEXAS				WATERSHED Y-2				42.12	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 26-27, 1964 - Continued																
Watershed conditions: 33% pasture, bermuda and native grass, good cover, moderately grazed; 29% oats-clover, bloom stage; 19% cotton, 2 leaf stage; 18% row grain sorghum, 4 to 6 inches high; 1% gravel roads. Cropland terraced, cultivated on contour.			4-26	0636	5.55	1.34	4-26	0709	.1859	.0199						
				0640	3.00	1.54		0710	.2095	.0232						
				0644	1.65	1.65		0712	.2585	.0310						
				0658	.21	1.70		0714	.2747	.0399						
				0728	.10	1.75		0715	.2765	.0445						
				0956	.01	1.77		0720	.2686	.0672						
				1056	.00	1.77		0726	.2808	.0947						
				1306	.02	1.81		0728	.2765	.1040						
				RG	69	1.94		0732	.2585	.1218						
				RG	69B	1.73		0737	.2278	.1421						
				RG	70	1.79		0742	.1981	.1598						
				RG	84A	1.70		0747	.1740	.1753						
				5 RG	AVG 1/	1.80		0752	.1511	.1889						
								0757	.1303	.2006						
								0802	.1102	.2106						
								0807	.0927	.2191						
								0810	.0851	.2235						
								0815	.0675	.2295						
								0820	.0596	.2348						
								0825	.0531	.2395						
								0835	.0435	.2475						
								0845	.0353	.2540						
								0900	.0263	.2617						
								0915	.0206	.2676						
								0930	.0166	.2723						
								1000	.0104	.2789						
								1100	.0049	.2862						
								1206	.0024	.2901						
								1316	.0011	.2922						
								1426	.0005	.2931						
								1521	.0003	.2934						
								1556	.0002	.2936						
								1756	.0001	.2938						
								2400	T	.2939						
								4-27	0311	.0000	.2939					

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 133.10. $\frac{1}{2}$ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 69B, 70, 75A, and 84A.

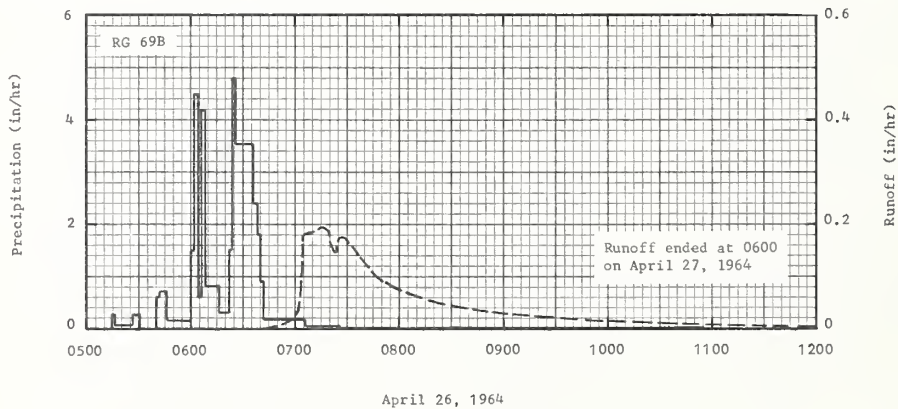


RIESEL (WACO), TEXAS WATERSHED Y-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESE (WACO), TEXAS					WATERSHED Y-4				42.13		
AREA — 79.9 ACRES																	
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964 P ² / ₇₆ YR	3.32	2.07	2.10	4.64	.68	2.30	.05	5.90	4.96	1.06	3.50	1.05	31.63				
Q	T	.00	.00	.23	.00	.00	.00	.00	.00	.00	T	.00	.23				
STA AV ² / ₃ P	2.13	2.58	2.10	3.83	3.95	3.73	1.40	1.84	2.42	2.64	2.92	2.31	31.85				
(39-64) Q	.36	.40	.28	.68	.79	.55	.09	T	.12	.14	.36	.33	4.10				
MEAN P ² / ₇₆ YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
			DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	4-26	.20	4-26	.14	4-26	.19	4-26	.22	4-26	.23	4-26	.23	4-26	.23	4-26	.23	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 TO 1964	6-10 1941	3.12	4-19 1957	2.16	4-19 1957	2.85	4-19 1957	3.25	4-23 1957	3.40	4-23 1957	3.43	4-23 1957	5.12	4-19 1957	9.46	
NOTES: Watershed land use: 31% pasture; 30% row grain sorghum; 28% cotton; 10% oats-clover; 1% gravel roads. Cropland terraced and contour tilled; no changes in conservation practices. ² / ₇₆ Precipitation data from Thiessen method using rain gages 69, 69B, 75A, and 84A. ² / ₃ Precipitation and runoff records began Jan. 1, 1939; station not in operation July 1943 to Jan. 1, 1946; part-year amounts not included in averages. ² / ₇₆ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ² / ₃ Maximums for 1943 occurred before July; no maximums for 1944 and 1945.																	
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																	
Soil	Per-cent of area	Topsoil			Subsoil		Substratum		Internal drainage								
		Avg. depth (in.)	Structure	Perme-ability	Structure	Perme-ability	Avg. depth to(in.)	Perme-ability									
Houston Black clay	74	⁵ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	58	Very slow	Very slow								
Austin silty clay	14	⁵ / ₆	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	26	Moderate	Medium								
Heiden clay	12	⁵ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	36	Nearly impervious	Very slow								
⁵ / ₆ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																	
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS					WATERSHED Y-4				42.13		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
4 RG ⁶ / ₇ Event of April 26-27, 1964																	
4-05	.83	.0000	4-26	RG	69B	.00	4-26	0628	.0000	.0000							
4-12	.05	.0000		0514	.00	.00		0643	.0021	.0001							
4-16	1.20	.0000		0516	.30	.01		0650	.0071	.0007							
4-17	.02	.0000		0526	.06	.02		0658	.0149	.0021							
4-21	.01	.0000		0530	.30	.04		0702	.0328	.0034							
4-24	.04	.0000		0540	.00	.04		0703	.1286	.0047							
4-25	.68	.0000		0542	.60	.06		0704	.1758	.0073							
				0546	.75	.11		0706	.1821	.0132							
				0600	.13	.14		0708	.1861	.0194							
				0602	1.50	.19		0713	.1917	.0351							
Watershed conditions: 31% pasture, bermuda and native grass, good cover, moderately grazed; 30% row grain sorghum, 4 to 6 inches high; 28% cotton, 2 leaf stage; 10% oats-clover, bloom stage; 1% gravel roads. Cropland terraced, contour cultivation.																	
			0604	4.50	.34	0716	.1979	.0449									
			0606	.60	.36	0718	.1891	.0513									
			0608	4.20	.50	0720	.1700	.0573									
			0616	.82	.61	0722	.1562	.0627									
			0622	.30	.64	0723	.1478	.0653									
			0624	1.50	.69	0724	.1544	.0678									
			0626	4.80	.85	0725	.1691	.0705									
			0636	3.54	1.44	0726	.1777	.0734									
			0638	2.40	1.52	0728	.1777	.0793									
			0640	1.80	1.58	0730	.1700	.0851									
Continued on next page																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 80.565. FOR MAP OF WATERSHED SEE, PAGE 42.11-5 (REVISED) OF THIS PUBLICATION. ⁶ / ₇ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 69B, 75A, AND 84A.																	

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y-4				42.13
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of April 26-27, 1964 - Continued											
			4-26	0642	.90	1.61	4-26	0733	.1562	.0932	
				0706	.18	1.68		0738	.1323	.1053	
				0726	.03	1.69		0743	.1137	.1155	
				1056	.01	1.72		0748	.0979	.1243	
				1246	T	1.73		0753	.0878	.1321	
				RG	69	1.94		0758	.0793	.1390	
				RG	75A	1.81		0808	.0649	.1510	
				RG	84A	1.70		0813	.0589	.1562	
			4 RG	AVC	1.70	1.81		0818	.0532	.1609	
								0833	.0429	.1728	
								0853	.0340	.1855	
								0913	.0250	.1952	
								0933	.0192	.2027	
								0953	.0148	.2082	
								1023	.0101	.2143	
								1103	.0056	.2195	
								1203	.0024	.2234	
								1256	.0011	.2249	
								1356	.0004	.2256	
								1456	.0002	.2259	
								1556	.0001	.2260	
								2400	T	.2261	
							4-27	0600	.0000	.2261	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 80.565. 1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69, 69B, 75A, and 84A.

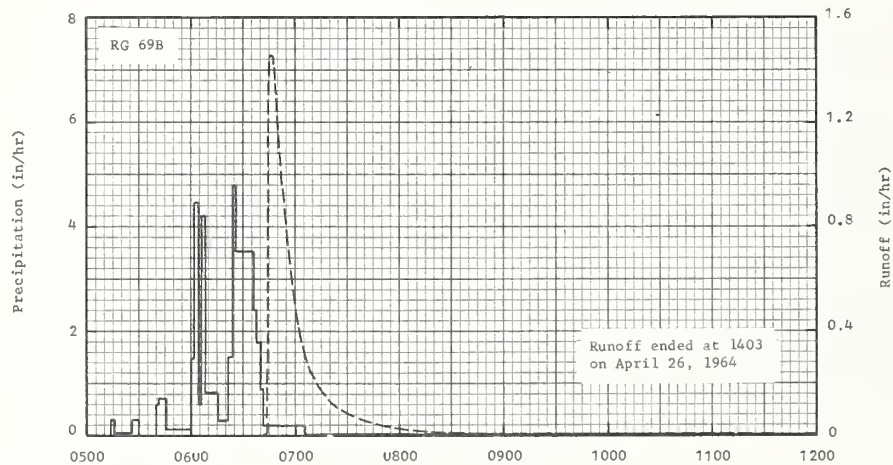


RIESEL (WACO), TEXAS WATERSHED Y-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WAGO), TEXAS WATERSHED Y-6 42.14										
						AREA — 16.3 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P $\frac{2}{3}$	3.31	2.07	2.09	4.58	.69	2.32	.05	5.92	5.01	1.10	3.49	1.04	31.67			
Q	.00	.00	.00	.43	.00	.00	.00	.00	.01	.00	.00	.00	.44			
STA AV $\frac{2}{3}$ /P	2.02	2.67	1.92	3.89	3.67	3.94	1.46	1.86	2.35	2.81	2.89	2.27	31.75			
(39-64) Q	.28	.34	.15	.67	.61	.57	.09	T	.12	.26	.38	.33	3.80			
MEAN P $\frac{3}{76}$ YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	1.45	4-26	.39	4-26	.42	4-26	.43	4-26	.43	4-26	.43	4-26	.43	4-26	.43
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964 $\frac{4}{76}$	6-10 1941	3.79	6-10 1941	1.51	4-19 1957	1.99	4-23 1957	2.65	5-11 1957	2.87	5-11 1957	2.90	11-22 1940	4.87	4-19 1957	8.49
NOTES: Watershed land use: 93% cotton; 5% pasture; 2% gravel roads. Cropland terraced and contour tilled; no change in conservation practices. $\frac{1}{3}$ Precipitation data from Thiessen method using rain gages 69B and 75A. $\frac{2}{3}$ Precipitation and runoff records began Jan. 1939; station not in operation July 1943 to May 1, 1947; part-year amounts not included in averages. $\frac{3}{76}$ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. $\frac{4}{76}$ Maximums for 1943 occurred before July; no maximums 1944 through 1947.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage							
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Austin silty clay	36	E/ 6	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	24	Moderate	Medium							
Houston Black clay	35	E/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow							
Heiden clay	29	E/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	36	Nearly impervious	Very slow							
E/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WAGO), TEXAS WATERSHED Y-6 42.14										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
4-05	2 RG 6/ .82	.0000	Event April 26, 1964				4-26	0641	.0000	.0000						
4-12	.04	.0000	4-26	RG 69B	.00	.00		0642	T	T						
4-16	1.22	.0000		0514	.00	.01		0643	.0102	.0001						
4-17	T	.0000		0516	.30	.02		0644	1.1093	.0094						
4-21	.01	.0000		0526	.06	.02		0645	1.3827	.0302						
4-24	.04	.0000		0530	.30	.04		0646	1.4545	.0538						
4-25	.70	.0000		0540	.00	.04		0647	1.4545	.0781						
				0542	.60	.06		0648	1.3965	.1018						
				0546	.75	.11		0649	1.3236	.1245						
				0600	.13	.14		0650	1.2301	.1458						
				0602	1.50	.19		0651	1.1220	.1654						
				0604	4.50	.34		0652	1.0136	.1832						
				0606	.60	.36		0653	.9349	.1994						
				0608	4.20	.50		0655	.7810	.2280						
				0616	.82	.61		0657	.6496	.2518						
				0622	.30	.64										
				0624	1.50	.69		0659	.5337	.2715						
				0626	4.80	.85		0700	.4797	.2800						
				0636	3.54	1.44		0701	.4489	.2877						
				0638	2.40	1.52		0702	.4189	.2949						
				0640	1.80	1.58		0703	.3897	.3017						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS. MULTIPLY BY 16.436. FOR MAP OF THE WATERSHED, SEE PAGE 42.11-5 (REVISED) OF THIS PUBLICATION. $\frac{6}{76}$ THIENSEN WEIGHTED RAINFALL USING RAIN GAGES 69B AND 75A.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y-6				42.14
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of April 26, 1964 - Continued											
			4-26	0642	.90	1.61	4-26	0704	.3570	.3079	
				0706	.18	1.68		0705	.3281	.3136	
				0726	.03	1.69		0707	.2846	.3237	
				1056	.01	1.72		0709	.2519	.3327	
				1246	T	1.73		0711	.2171	.3405	
				RG	75A	1.81		0713	.1954	.3474	
				2 RG	AVG 1/	1.75		0720	.1372	.3668	
								0723	.1219	.3732	
								0727	.0996	.3806	
								0731	.0838	.3867	
								0735	.0722	.3918	
								0740	.0590	.3973	
								0745	.0494	.4018	
								0753	.0359	.4074	
								0803	.0237	.4124	
								0808	.0204	.4142	
								0818	.0155	.4172	
								0833	.0096	.4203	
								0903	.0045	.4236	
								0933	.0024	.4253	
								1003	.0014	.4263	
								1033	.0007	.4268	
								1103	.0004	.4271	
								1133	.0002	.4272	
								1203	.0001	.4273	
								1403	.0000	.4273	

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 16.436. 1/ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69B, AND 75A.



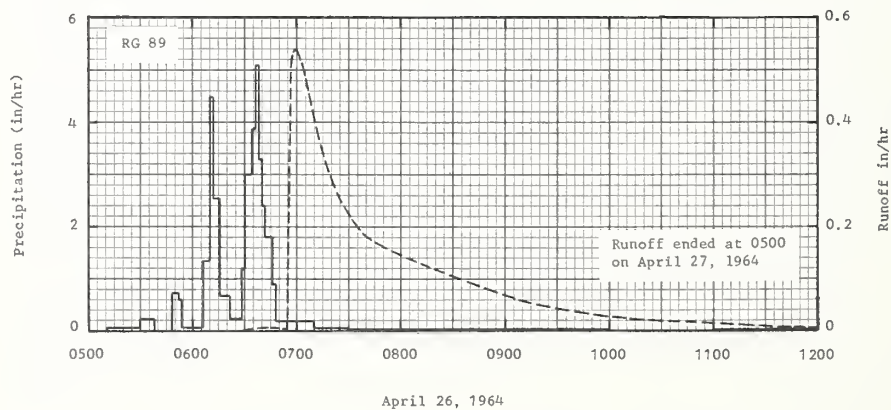
April 26, 1964

RIESEL (WACO), TEXAS WATERSHED Y-6

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS				WATERSHED Y-7				42.15			
AREA — 40.0 ACRES																	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964 P ^{1/}	3.21	2.11	2.12	4.50	.58	2.22	.11	5.83	4.72	1.10	3.65	1.00	31.15				
O	.01	.03	T	.49	.00	.00	.00	.30	.01	.00	.16	.00	1.00				
STA AV ^{2/} /P	2.04	2.71	1.95	3.96	3.70	3.90	1.45	1.89	2.30	2.86	2.95	2.31	32.02				
(39-64) Q	.27	.39	.24	.77	.80	.63	.08	.03	.17	.24	.45	.41	4.48				
MEAN P ^{3/} 76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	4-26	.54	4-26	.29	4-26	.40	4-26	.49	4-26	.49	4-26	.49	4-26	.49	4-26	.49	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 to 1964	6-10 1941	3.59	4-19 1957	2.34	4-19 1957	2.76	4-23 1957	3.28	4-23 1957	3.31	4-23 1957	3.31	11-22 1940	5.37	4-19 1957	8.89	
NOTES: Watershed land use: 7% pasture; 46% oats; 25% corn; 22% tilled, no crop. Cropland terraced, contour tilled. ^{1/} Precipitation data from Thiessen method using rain gages 89 and W-2A. ^{2/} Precipitation and runoff records began Jan. 1939; station not in operation from July 1943 to May 1, 1947; part-year amounts not included in averages. ^{3/} Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ^{4/} Maximums for 1943 occurred before July; no maximums for 1944 through 1947.																	
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																	
Soil	Per- cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage								
			Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability									
Houston Black clay	85	^{5/} 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow								
Heiden clay	15	^{5/} 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	48	Nearly impervious	Very slow								
^{5/} Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																	
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS				WATERSHED Y-7				42.15			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
	2 RG ^{6/}			Event of April 26-27, 1964													
4-05	.92	.0000	4-26	RG	.89		4-26	0628	.0000	.0000							
4-12	.01	.0000		0510	.00	.00		0645	.0036	.0004							
4-16	1.11	.0000		0530	.06	.02		0647	.0034	.0005							
4-17	T	.0000		0538	.22	.05		0654	.0024	.0009							
4-21	T	.0000		0548	.00	.05		0655	.0721	.0015							
4-24	.02	.0000		0552	.75	.10		0656	.3320	.0048							
4-25	.78	.0000		0554	.60	.12		0657	.4994	.0118							
				0606	.05	.13		0658	.5256	.0203							
				0610	1.35	.22		0659	.5403	.0292							
				0612	4.50	.37		0700	.5403	.0382							
Watershed conditions: 7% pasture, bermuda grass, good cover, lightly grazed, 46% oats, bloom stage; 25% corn, 4 to 6 inches high; 22% no crop, listed. Cropland terraced, contour cultivation.																	
				0616	2.55	.54		0702	.5211	.0559							
				0622	.70	.61		0704	.5003	.0729							
				0628	.20	.63		0705	.4817	.0811							
				0630	1.20	.67		0706	.4598	.0889							
				0634	3.00	.87		0707	.4417	.0965							
				0636	3.90	1.00		0709	.4172	.1108							
				0638	5.10	1.17		0711	.3915	.1243							
				0640	3.30	1.28		0713	.3657	.1369							
				0642	2.40	1.36		0715	.3444	.1487							
				0646	1.80	1.48		0717	.3198	.1598							
				0648	.90	1.51		0719	.2980	.1701							
				0710	.19	1.58		0721	.2826	.1798							
				0730	.06	1.60		0723	.2668	.1889							
				1000	.01	1.62		0725	.2548	.1976							
				1100	.00	1.62		0727	.2396	.2058							
Continued on next page																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 40.333. FOR MAP OF THE WATERSHED, SEE PAGE 42.11-5 (REVISED) OF THIS PUBLICATION. ^{6/} THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 89 AND W-2A.																	

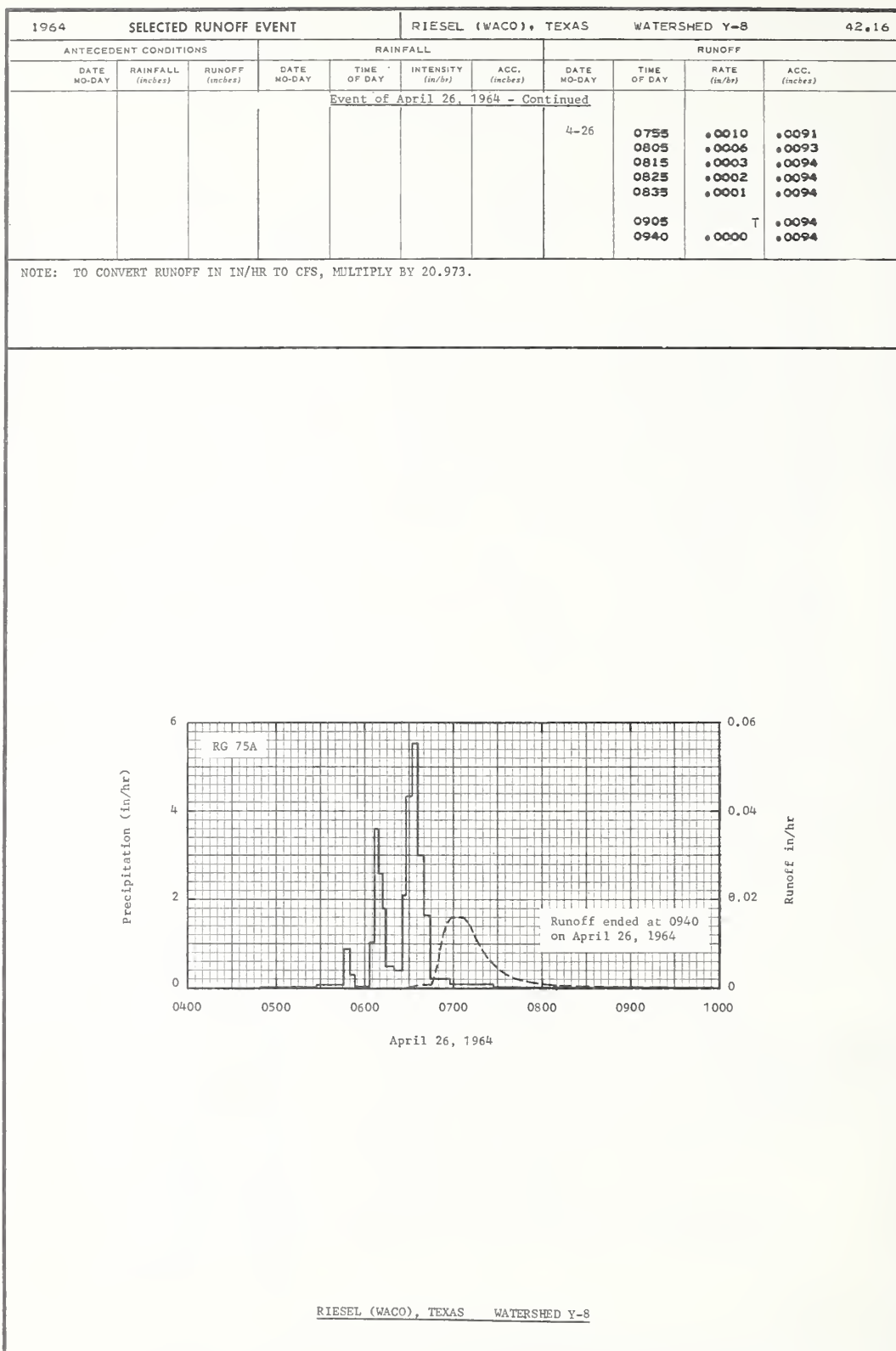
1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED Y-7			42.15
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of April 26-27, 1964 - Continued										
			4-26	1300	.02	1.66	4-26	0729	.2308	.2137
				RG	W-2A	1.63		0731	.2208	.2212
				2 RG	AVG 1/	1.66		0735	.2044	.2354
								0738	.1843	.2451
								0743	.1766	.2601
								0748	.1663	.2744
								0753	.1556	.2878
								0758	.1474	.3004
								0803	.1401	.3124
								0813	.1275	.3346
								0822	.1122	.3527
								0832	.1019	.3705
								0842	.0902	.3865
								0847	.0831	.3937
								0852	.0768	.4004
								0902	.0660	.4123
								0912	.0569	.4225
								0922	.0497	.4314
								0932	.0440	.4392
								0942	.0385	.4461
								0952	.0332	.4521
								1002	.0275	.4571
								1022	.0207	.4651
								1047	.0147	.4726
								1112	.0096	.4775
								1142	.0063	.4814
								1237	.0032	.4857
								1317	.0019	.4874
								1357	.0011	.4884
								1427	.0007	.4888
								1457	.0004	.4891
								1557	.0002	.4894
								1757	.0001	.4896
								2400	.0000	.4897
							4-27	0500	.0000	.4897

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 40.333. $\frac{1}{2}$ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 89 and W-2A.



RIESEL (WACO), TEXAS WATERSHED Y-7

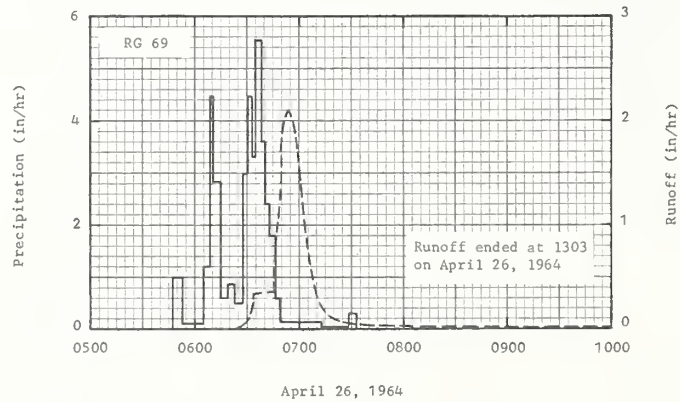
MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS WATERSHED Y-8 42.16 AREA — 20.8 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ¹ / _Q	3.25	2.12	2.17	4.61	.64	2.25	.05	5.79	5.11	1.10	3.57	1.00	31.66			
Q	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.01			
STA AV ² / _P	1.90	2.68	2.00	3.97	3.53	4.12	1.53	1.86	2.45	2.96	3.00	2.35	32.35			
(40-64) Q	.31	.39	.19	.72	.64	.57	.08	.00	.14	.16	.44	.37	4.01			
MEAN P ³ / _{76 YR}	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		5 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.02	4-26	.01	4-26	.01	4-26	.01	4-26	.01	4-26	.01	4-26	.01	4-26	.01
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964 ⁴ / ₁₉₄₁	6-10	3.29	4-19	2.41	4-19	2.80	4-23	3.32	4-23	3.37	4-23	3.37	11-22	5.64	4-19	9.10
1941			1957		1957		1957		1957		1957		1940		1957	
NOTES: Watershed land use: 95% oats-clover; 3% pasture; 2% gravel roads. Cropland terraced and contour tilled; no change in conservation practices. ¹ / Precipitation data obtained from rain gage 75A. ² / Precipitation and runoff records began Mar. 1, 1939; station not in operation July 1943 to Jan. 1, 1949; part-year amounts not included in averages. ³ / Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ⁴ / Maximums for 1939 occurred after Mar. 1; maximums for 1943 occurred before July; no maximums 1944 through 1948.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	93	5/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow							
Austin silty clay	7	5/ 6	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	30	Moderate	Medium							
5/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS WATERSHED Y-8 42.16										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 26, 1964																
4-05	RG 75A .88	.0000	4-26	RG	75A		4-26	0628	.0000	.0000						
4-12	.03	.0000		0448	.00	.00		0636	.0004	.0004						
4-16	1.17	.0000		0528	.03	.02		0642	.0011	.0001						
4-17	.02	.0000		0546	.10	.05		0644	.0007	.0001						
4-21	T	.0000		0550	.90	.11		0645	.0007	.0001						
4-24	.04	.0000		0554	.30	.13		0646	.0016	.0002						
4-25	.66	.0000		0603	.07	.14		0647	.0028	.0002						
				0607	1.05	.21		0648	.0042	.0003						
				0609	3.60	.33		0649	.0053	.0003						
				0612	2.60	.46		0650	.0066	.0004						
				0614	1.80	.52		0651	.0078	.0006						
				0620	.50	.57		0652	.0093	.0007						
				0626	.40	.61		0653	.0114	.0009						
				0628	2.10	.68		0655	.0144	.0013						
				0632	4.35	.97		0658	.0159	.0021						
				0636	5.55	1.34		0707	.0159	.0044						
				0640	3.00	1.54		0710	.0150	.0052						
				0644	1.65	1.65		0715	.0115	.0063						
				0658	.21	1.70		0720	.0081	.0071						
				0728	.10	1.75		0725	.0060	.0077						
				0956	.01	1.77		0730	.0044	.0082						
								0735	.0032	.0085						
								0740	.0025	.0087						
								0745	.0019	.0089						
								0750	.0014	.0090						
Watershed conditions: 95% oats-clover, bloom stage, 3% pasture, bermudagrass, good cover, lightly grazed; 2% gravel roads. Cropland terraced, contour cultivation.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 20.973. FOR MAP OF WATERSHED, SEE PAGE 42.11-5 (REVISED) OF THIS PUBLICATION.																



MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS				WATERSHED Y-10				42.17				
						AREA — 18.6 ACRES												
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL					
YEAR																		
1964 P ¹ / ₂	3.33	2.06	2.08	4.63	.69	2.31	.05	5.93	4.95	1.06	3.48	1.06	31.63					
Q		.00		.69	.00	.00	.00	.00	.00	.00	.01	.00	.70					
STA AV ² /P	2.09	2.56	1.98	3.88	3.71	3.80	1.40	1.84	2.35	2.69	2.83	2.30	31.43					
(39-64) Q	.35	.34	.23	.80	.72	.59	.09	.01	.20	.21	.35	.35	4.24					
MEAN P ³ / _{76 YR}	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86					
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1964	4-26	2.10	4-26	.66	4-26	.68	4-26	.69	4-26	.69	4-26	.69	4-26	.69	4-26	.69		
MAXIMUMS FOR PERIOD OF RECORD																		
1938 TO 1964 ⁴ / ₂	4-19 1957	3.73	4-19 1957	2.90	4-19 1957	3.48	4-19 1957	3.62	4-19 1957	3.86	4-19 1957	3.91	4-23 1957	5.34	4-19 1957	10.57		
NOTES: Watershed land use: 93% row grain sorghum; 4% pasture; 3% gravel roads. Cropland terraced and contour tilled; no change in conservation practices. ¹ / ₂ Precipitation data from Thiessen method using rain gages 69 and 69B. ² / ₂ Precipitation and runoff records began July 1, 1938; station not in operation July 1943 to May 1, 1946; part-year amounts not included in averages. ³ / ₂ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ⁴ / ₂ Maximums for 1943 occurred before July; maximums for 1946 occurred after May 1; no maximums 1938, 1944, and 1945.																		
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																		
Soil	Per-cent of area	Topsoil			Subsoil			Substratum			Internal drainage							
		Avg. depth (in.)	Structure	Perme-ability	Structure	Perme-ability	Avg. depth to(in.)	Perme-ability										
Houston Black clay	94	5/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	59	Very slow	Very slow									
Austin silty clay	6	5/ 6	Strong moderate granular	Rapid if dry, slow if wet	Strong moderate subangular blocky	Rapid if dry, slow if wet	24	Moderate	Medium									
⁵ / ₂ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																		
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS				WATERSHED Y-10				42.17				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
4-05	2 RG 6/ .81	.0000	Event of April 26, 1964				4-26	0621	.0000	.0000								
4-12	.05	.0000	4-26	RG 69	.69	.00		0622	.0022	.0000								
4-16	1.22	.0000		0547	.00	.00		0623	.0178	.0002								
4-17	.02	.0000		0553	1.00	.10		0624	.0231	.0005								
4-21	.01	.0000		0605	.10	.12		0625	.0280	.0010								
				0609	1.20	.20												
4-24	.04	.0000		0611	4.50	.35		0626	.0367	.0015								
4-25	.68	.0000		0615	2.85	.54		0627	.0442	.0022								
				0619	.60	.58		0628	.0557	.0030								
				0623	.90	.64		0629	.0724	.0041								
				0628	.48	.68		0630	.0894	.0054								
Watershed conditions: 93% row grain sorghum, 4 to 6 inches high; 4% pasture, bermudagrass, good cover, lightly grazed; 3% gravel roads; cropland terraced, contour cultivation.				0631	3.00	.83		0631	.1040	.0070								
				0633	4.50	.98		0632	.1823	.0092								
				0635	3.30	1.09		0633	.3480	.0133								
				0639	5.55	1.46		0645	.3721	.0853								
				0641	3.60	1.58		0646	.5888	.0933								
				0643	2.40	1.66		0647	.8380	.1052								
				0647	1.80	1.78		0648	1.0504	.1210								
				0649	.60	1.80		0649	1.3129	.1407								
				0713	.15	1.86		0650	1.6318	.1652								
				0729	.04	1.87		0651	1.8449	.1942								
				0733	.30	1.89		0652	1.9610	.2259								
				RG 69B		1.69		0653	2.0576	.2594								
				2 RG	AVG 6/	1.76		0654	2.1041	.2941								
								0655	2.0919	.3290								
								0656	2.0479	.3635								
			Continued on next page															
			NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 18.755. FOR MAP OF THE WATERSHED, SEE PAGE 42.11-5 (REVISED) OF THIS PUBLICATION. ⁶ / ₂ THIESSEN WEIGHTED RAINFALL USING RAIN GAGES 69 AND 69B.															

1964			SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS		WATERSHED Y-10		42.17
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			Event of April 26, 1964 - Continued								
							4-26	0657	1.9610	.3969	
								0658	1.8519	.4287	
								0659	1.6904	.4582	
								0700	1.5256	.4850	
								0701	1.3608	.5091	
								0702	1.1889	.5303	
								0703	1.0543	.5490	
								0704	.8627	.5650	
								0705	.7553	.5785	
								0707	.5598	.6003	
								0709	.3932	.6161	
								0711	.3017	.6276	
								0714	.1963	.6400	
								0718	.1119	.6498	
								0720	.0845	.6531	
								0723	.0724	.6570	
								0728	.0557	.6623	
								0738	.0381	.6702	
								0753	.0199	.6765	
								0808	.0111	.6802	
								0818	.0077	.6818	
								0833	.0048	.6833	
								0903	.0021	.6850	
								0943	.0011	.6860	
								1033	.0004	.6865	
								1103	.0002	.6867	
								1123	.0001	.6867	
								1154	T	.6868	
								1303	.0000	.6868	

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 18.755.



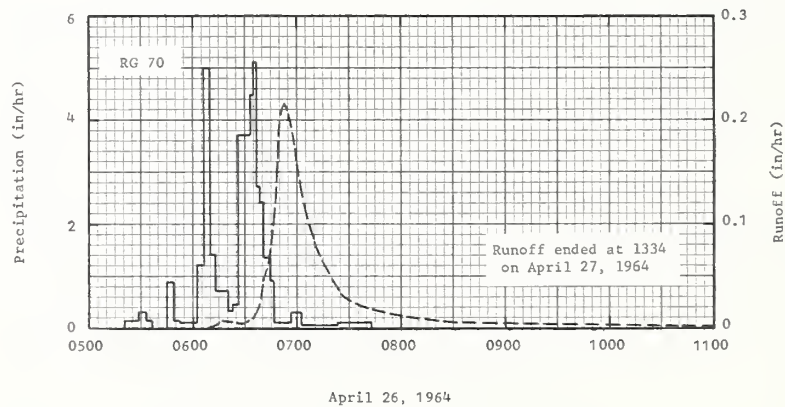
RIESEL (WACO), TEXAS WATERSHED Y-10

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED SW-12		42.24						
						AREA — 2.97 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/2	3.45	2.10	2.13	4.53	.62	2.13	.01	5.91	4.77	1.01	3.68	1.00	31.34			
Q	.00	.00	.01	.15	.00	.00	.00	.00	.02	.00	.01	.00	.19			
STA AV 2/P	2.09	2.62	1.94	3.89	3.66	3.91	1.44	1.78	2.32	2.69	2.81	2.25	31.40			
(38-64) Q	.38	.45	.14	.49	.39	.28	T	T	.05	.01	.18	.29	2.66			
MEAN P 3/76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.22	4-26	.09	4-26	.10	4-26	.14	4-26	.14	4-26	.14	4-26	.15	4-26	.15
MAXIMUMS FOR PERIOD OF RECORD																
1938 to 1964	6-10 1941	3.48	4-19 1957	2.42	4-19 1957	2.76E	4-23 1957	3.29E	4-23 1957	3.34E	4-23 1957	3.34	4-23 1957	4.61E	4-19 1957	8.53E
NOTES: Watershed land use: 100% native grass meadow mowed annually for hay. 1/2 Precipitation data obtained from rain gage 70. 2/ Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to June 1, 1947; part-year amounts not included in averages. 3/ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. 4/ Maximums for 1943 occurred before July; no maximums for 1944 through 1947.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
SOIL	Per- cent of area	Topsoil			Subsoil			Substratum		Internal drainage						
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	100	5/ 6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	59	Very slow	Very slow							
5/ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED SW-12		42.24						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
OATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	OATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	OATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
4-05	RG 70 .86	.0011	Event of April 26-27, 1964													
4-12	.06	.0000	4-26	RG 70	.00	.00	4-26	0609	.0000	.0000						
4-16	1.15	.0000		0521	.00	.00		0614	.0029	.0001						
4-17	T	.0000		0529	.15	.02		0616	.0059	.0003						
4-21	.02	.0000		0533	.30	.04		0617	.0072	.0004						
				0537	.15	.05		0618	.0072	.0005						
4-24	.04	.0000		0545	.00	.05		0624	.0055	.0011						
4-25	.61	.0000		0549	.90	.11		0629	.0038	.0015						
				0553	.15	.12		0631	.0046	.0016						
				0603	.06	.13		0634	.0096	.0020						
				0607	1.20	.21		0637	.0160	.0026						
				0610	5.00	.46		0639	.0239	.0033						
				0613	1.40	.53		0640	.0317	.0037						
				0621	.68	.62		0641	.0444	.0044						
				0623	.30	.63		0642	.0507	.0052						
				0627	.85	.66		0644	.0672	.0071						
				0633	3.70	1.03		0646	.0872	.0097						
				0635	4.50	1.18		0647	.1048	.0113						
				0637	5.10	1.35		0648	.1291	.0132						
				0639	2.70	1.44		0649	.1774	.0158						
				0641	2.40	1.52		0650	.1949	.0189						
				0645	1.35	1.61		0651	.2059	.0222						
				0647	.90	1.64		0652	.2164	.0257						
				0657	.12	1.66		0654	.2091	.0328						
				0703	.30	1.69		0656	.1964	.0396						
				0713	.06	1.70		0658	.1789	.0458						
				0743	.08	1.74		0700	.1600	.0515						
				1103	.00	1.74		0702	.1395	.0565						
				1343	.02	1.79		0704	.1228	.0608						
								0706	.1089	.0647						
								0708	.0947	.0681						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.9947. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 42.24-4.																

Cooperative Research Project of USDA and Texas Agricultural Experiment Station

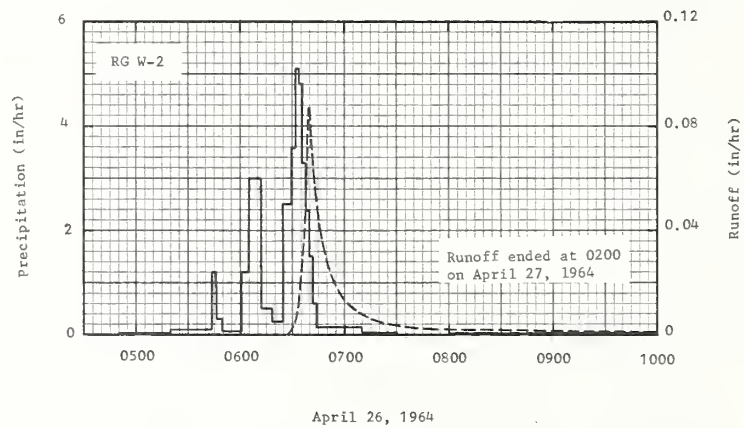
1964			SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS		WATERSHED SW-12		42.24
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			Event of April 26-27, 1964 - Continued				4-26	0710	.0835	.0711	
								0712	.0742	.0737	
								0714	.0672	.0760	
								0718	.0549	.0801	
								0722	.0430	.0834	
								0726	.0321	.0858	
								0730	.0270	.0878	
								0739	.0202	.0912	
								0749	.0149	.0941	
								0809	.0089	.0979	
								0819	.0072	.0993	
								0839	.0053	.1013	
								0904	.0037	.1032	
								1004	.0029	.1065	
								2400	.0021	.1411	
							4-27	0600	.0006	.1490	
								1334	.0000	.1511	

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2.9947.



RIESEL (WACO), TEXAS WATERSHED SW-12

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS WATERSHED SW-17 42.28										
						AREA — 2.99 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P $\frac{2}{7}$	3.24	2.02	2.10	4.55	.61	2.33	.07	6.05	4.85	1.23	3.44	1.01	31.50			
Q	.00	.00	.00	.03	.00	.00	.00	.00	T	.00	.00	.00	.03			
STA AV $\frac{2}{7}$ P	1.94	2.70	1.95	4.06	3.59	3.90	1.54	1.92	2.49	2.99	2.98	2.37	32.43			
(40-64) Q	.36	.54	.31	.89	.67	.74	.12	T	.22	.21	.52	.52	5.10			
MEAN P $\frac{2}{7}$ YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.09	4-26	.02	4-26	.02	4-26	.03	4-26	.03	4-26	.03	4-26	.03	4-26	.03
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964 $\frac{2}{7}$	10-31 1940	7.06	4-19 1957	2.54	4-19 1957	2.96	4-23 1957	3.31	4-23 1957	3.35	11-22 1940	3.91	11-22 1940	5.37	4-19 1957	9.42
NOTES:																
Watershed land use: 100% bermudagrass pasture. $\frac{2}{7}$ Precipitation data obtained from rain gage W-2.																
$\frac{2}{7}$ Precipitation and runoff records began Feb. 1, 1939; station not in operation July 1943 to Jan. 1, 1948; part-year amounts not included in averages. $\frac{2}{7}$ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. $\frac{4}{7}$ Maximums for 1939 occurred after Feb.; maximums for 1943 occurred before July; no maximums 1944 through 1947.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil			Substratum		Internal drainage						
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	70	$\frac{5}{6}$	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow							
Heiden clay	30	$\frac{5}{6}$	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	24	Nearly impervious	Very slow							
$\frac{5}{6}$ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS WATERSHED SW-17 42.28										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
RG W-2			Event of April 26-27, 1964													
4-05	.90	.0039	4-26	RG	W-2		4-26	0626	.0000	.0000						
4-12	.01	.0000		0450	.00	.00		0631	.0044	.0002						
4-16	1.12	.0000		0520	.02	.01		0632	.0067	.0003						
4-17	T	.0000		0544	.08	.04		0634	.0201	.0007						
4-21	T	.0000		0546	1.20	.08		0636	.0342	.0015						
4-24	T	.0000		0550	.30	.10		0638	.0427	.0032						
4-25	.63	.0000		0601	.05	.11		0639	.0789	.0043						
				0605	1.20	.19		0640	.0871	.0057						
				0612	3.00	.34		0641	.0705	.0070						
				0618	.50	.59		0643	.0571	.0091						
Watershed conditions: 100% pasture, bermudagrass and weeds, 4 to 6 inches high, good cover, not grazed.				0625	.26	.62	0645	.0463	.0109							
			0630	2.52	.83	0649	.0321	.0136								
			0632	3.60	.95	0651	.0240	.0145								
			0634	5.10	1.12	0655	.0191	.0159								
			0636	4.80	1.28	0659	.0140	.0170								
			0638	3.30	1.39	0706	.0087	.0183								
			0640	2.40	1.47	0716	.0051	.0194								
			0642	1.50	1.52	0731	.0031	.0204								
			0644	.60	1.54	0751	.0021	.0213								
			0710	.16	1.61	0901	.0010	.0229								
			0730	.03	1.62	1001	.0007	.0238								
			0800	.00	1.62	1131	.0006	.0248								
			1000	.02	1.66	2400	.0001	.0291								
						4-27	0200	.0000	.0292							
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.0149. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, P. 42.6-6.																



RIESEL (WACO), TEXAS WATERSHED SW-17

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.245. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USOA MISC. PUB. 994, P. 42.31-4.

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED P-2		42.32			
						AREA — 0.243 ACRE							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 P ¹ / _Q	3.31	2.24	2.30	4.36	.62	2.20	.07	5.82	4.65	1.21	3.87	1.03	31.68
STA AV ² / _P	.00	.00	.00	.54	.00	.00	.00	.00	.00	.00	.00	.00	.54
(38-64) Q	2.34	2.83	1.82	3.52	2.48	5.29	1.43	1.78	2.70	2.84	3.64	3.05	33.72
MEAN P ² / _{76 YR}	.58	.64	.20	.28	.21	1.22	.10	.00	.25	.05	.76	.63	4.92
MEAN P ² / _{76 YR}	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	1.48	4-26	.53	4-26	.54	4-26	.54	4-26	.54	4-26	.54	4-26	.54	4-26	.54

MAXIMUMS FOR PERIOD OF RECORD																
1938 to 1964	6-10 1941	6.65	6-10 1949	2.09	6-10 1941	2.14	11-22 1940	2.34	11-22 1940	2.45	11-22 1940	3.04	11-22 1940	5.36	11-22 1940	5.83

NOTES: Watershed land use: 100% bermudagrass and buffalograss pasture, heavily grazed. ²/_P Precipitation data obtained from rain gage W-9. ²/_P Precipitation and runoff records began Jan. 1, 1938; runoff record lost May 16-20, 1939, which was only runoff that year; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. ²/_P Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ²/_P Maximums for 1943 occurred before July; no maximums for 1939 and 1944 through 1959.

SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.

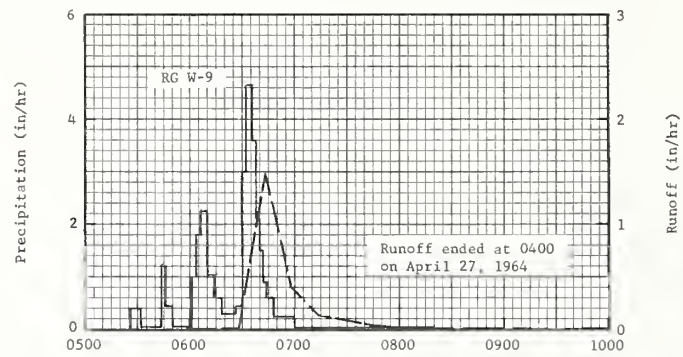
Soil	Per- cent of area	Topsoil		Subsoil		Substratum			
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability	Internal drainage
Houston Black clay	100	⁵ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow

⁵/₆ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.

1964 SELECTED RUNOFF EVENT				RIESEL (WACO), TEXAS		WATERSHED P-2		42.32	
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
4-05	RG W-9 .97	.0000	4-26	RG W-9 0526	.00	.00	4-26	0558	.0000
4-12	T	.0000		0532	.40	.04		0613	.0005
4-16	.96	.0000		0544	.05	.05		0628	.0009
4-17	T	.0000		0546	1.20	.09		0643	1.4800
4-21	T	.0000						0658	.3993
4-24	T	.0000		0550	.45	.12		0713	.1395
4-25	1.01	.0000		0601	.05	.13		0728	.0881
				0604	1.00	.18		0743	.0382
				0606	1.80	.24		0758	.0069
				0610	2.25	.39		0813	.0013
				0614	1.05	.46		0913	.0013
				0618	.60	.50		1043	.0009
			0626	.30	.54	1213	.0000		
			0630	.45	.57				
			0632	3.00	.67				
			0636	4.65	.98				
			0638	3.60	1.10				
			0640	2.10	1.17				
			0642	1.50	1.22				
			0644	.90	1.23				
			0648	.60	1.29				
			0700	.25	1.34				
			0820	.04	1.39				
			1200	T	1.40				
			1320	.02	1.42				

Watershed conditions: 100% pasture, bermudagrass and buffalograss, 2 to 4 inches high, good cover, heavily grazed.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.245. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.31-4.



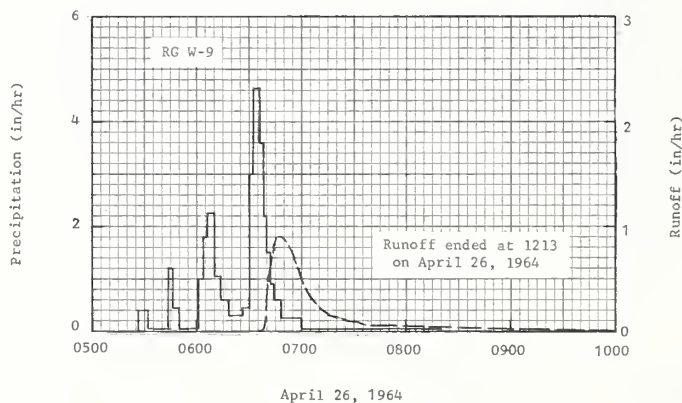
April 26, 1964

RIESEL (WACO), TEXAS WATERSHED P-2

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS		WATERSHED P-3		42.33						
						AREA — 0.243 ACRE										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ¹ / ₂	3.31	2.24	2.30	4.36	.62	2.20	.07	5.82	4.65	1.21	3.87	1.03	31.68			
Q	.00	.00	.00	.45	.00	.00	.00	.00	.00	.00	.00	.00	.45			
STA AV ² / _P	2.50	2.85	1.76	3.30	2.72	4.99	1.33	1.87	2.46	2.76	3.52	2.86	32.92			
(38-64) Q	.56	.59	.18	.27	.35	1.10	.08	.00	.21	.10	.61	.51	4.56			
MEAN P ³ / ₇₆ YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.90	4-26	.37	4-26	.40	4-26	.43	4-26	.45	4-26	.45	4-26	.45	4-26	.45
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1964 ³ / ₇₆ YR	6-10 1941	7.63	6-10 1941	2.13	6-10 1941	2.23	11-22 1940	2.32	11-22 1940	2.46	11-22 1940	3.02	11-22 1940	5.34	11-22 1940	5.93
NOTES: Watershed land use: 100% bermudagrass and buffalograss pasture, not grazed 1964. ¹ / ₂ Precipitation data obtained from rain gage W-9. ² / _P Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. ³ / ₇₆ Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. ⁴ / _P Maximums for 1943 occurred before July; no maximums 1944 through 1959.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil		Substratum		Internal drainage							
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	100	⁵ / ₆	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow							
⁵ / ₆ Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS		WATERSHED P-3		42.33						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG W-9			Event of April 26-27, 1964												
4-05	.97	.0000	4-26	RG W-9	.00	.00	4-26	0636	.0000	.0000						
4-12	T	.0000		0526	.40	.04		0637	.0069	.0001						
4-16	.96	.0000		0532	.05	.05		0638	.0313	.0004						
4-17	T	.0000		0544	.05	.05		0639	.0948	.0014						
4-21	T	.0000		0546	1.20	.09		0640	.3121	.0048						
4-24	T	.0000		0550	.45	.12		0641	.5085	.0117						
4-25	1.01	.0000		0601	.05	.13		0642	.6033	.0209						
				0604	1.00	.18		0643	.6980	.0318						
				0606	1.80	.24		0644	.7907	.0442						
				0610	2.25	.39		0646	.8991	.0723						
Watershed conditions: 100% pasture, bermudagrass and buffalograss and Johnsongrass, 2 to 6 inches high, dense cover, not grazed.				0614	1.05	.46		0649	.8991	.1173						
				0618	.60	.50		0651	.8559	.1465						
				0626	.30	.54		0653	.8137	.1744						
				0630	.45	.57		0656	.7023	.2123						
				0632	3.00	.67		0658	.5837	.2337						
				0636	4.65	.98		0701	.4590	.2598						
				0638	3.60	1.10		0704	.3710	.2805						
				0640	2.10	1.17		0706	.3009	.2917						
				0642	1.50	1.22		0708	.2661	.3012						
				0644	.90	1.25		0711	.2146	.3132						
				0648	.60	1.29		0716	.1626	.3289						
				0700	.25	1.34		0721	.1286	.3410						
				0820	.04	1.39		0726	.1045	.3507						
				1200	T	1.40		0731	.0908	.3589						
				1320	.02	1.42		0736	.0730	.3657						
								0741	.0592	.3712						
								0751	.0457	.3800						
								0801	.0364	.3868						
								0821	.0273	.3974						
								0901	.0150	.4107						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.245. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 42.31-4.																

1964 SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS				WATERSHED P-3			42.33
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of April 26-27, 1964 - Continued							4-26	0931	.0087	.4166
								1001	.0065	.4204
								1031	.0043	.4231
								1200	.0036	.4289
								1500	.0036	.4398
								1800	.0013	.4471
							4-27	2400	.0005	.4525
								0400	.0000	.4535

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.245.

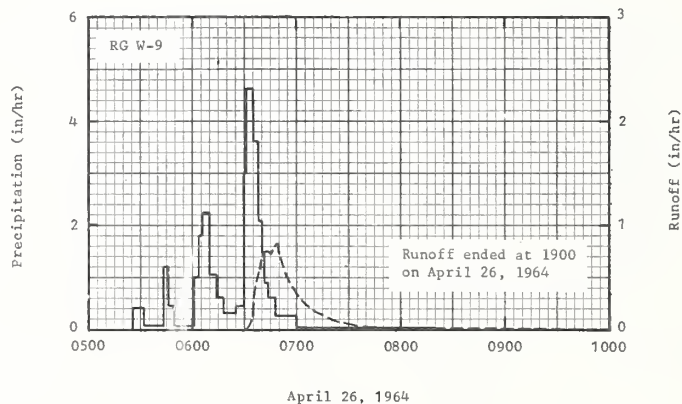


RIESEL (WACO), TEXAS WATERSHED P-3

MONTHLY PRECIPITATION AND RUNOFF (inches)						RIESEL (WACO), TEXAS						WATERSHED P-4		42.34		
						AREA — 0.243 ACRE										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/2	3.31	2.24	2.30	4.36	.62	2.20	.07	5.82	4.65	1.21	3.87	1.03	31.68			
Q	.00	.00	.00	.36	.00	.00	.00	.00	.00	.00	.00	.00	.36			
STA AV 2/2 P	2.50	2.85	1.76	3.30	2.72	4.99	1.33	1.87	2.46	2.76	3.52	2.86	32.92			
(38-64) Q	.64	.65	.18	.22	.22	1.10	.08	.00	.18	.05	.73	.73	4.78			
MEAN P 3/76 YR	2.16	2.37	2.77	4.14	4.51	3.30	2.04	1.95	2.87	2.61	2.53	2.61	33.86			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-26	.83	4-26	.33	4-26	.35	4-26	.35	4-26	.36	4-26	.36	4-26	.36	4-26	.36
MAXIMUMS FOR PERIOD OF RECORD																
1938 TO 1964 4/2	6-10	7.79	11-22	2.15	11-22	2.25	11-22	2.51	11-22	2.65	11-22	3.01	11-22	5.69	11-22	6.26
	1941		1940		1940		1940		1940		1940		1940		1940	
NOTES:																
Watershed land use: 100% bermudagrass and buffalograss pasture, not grazed 1964. 1/2 Precipitation data obtained from rain gage W-9. 2/2 Precipitation and runoff records began Jan. 1, 1938; station not in operation July 1943 to Jan. 1, 1960; part-year amounts not included in averages. 3/2 Mean P based on 76-yr (1889-1964) U. S. Weather Bureau record period at Waco, Texas. 4/2 Maximums for 1943 occurred before July; no maximums 1944 through 1959.																
SOILS: (Revision) Residual, derived from calcareous to highly calcareous beds of Taylor Marl.																
Soil	Per- cent of area	Topsoil			Subsoil			Substratum			Internal drainage					
		Avg. depth (in.)	Structure	Perme- ability	Structure	Perme- ability	Avg. depth to(in.)	Perme- ability								
Houston Black clay	100	5/6	Moderate fine granular	Rapid if dry, very slow if wet	Moderate fine angular blocky	Rapid if dry, very slow if wet	60	Very slow	Very slow							
5/2 Actually the plow layer; these deep swelling clay soils do not have well defined horizons, but surface 6 inches is altered by cultivation.																
1964 SELECTED RUNOFF EVENT						RIESEL (WACO), TEXAS						WATERSHED P-4		42.34		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
4-05	RG W-9	.0000	Event of April 26, 1964				4-26	0631	.0000	.0000						
4-12	.97	.0000	4-26	0526	.00	.00		0633	.0162	.0002						
4-16	T	.0000		0532	.40	.04		0634	.0614	.0008						
4-17	.96	.0000		0544	.05	.05		0635	.1586	.0027						
4-21	T	.0000		0546	1.20	.09		0636	.3037	.0065						
4-24	T	.0000		0550	.45	.12		0637	.4729	.0130						
4-25	1.01	.0000		0601	.05	.13		0638	.5682	.0217						
Watershed conditions: 100% pasture, bermudagrass and buffalograss and Johnson-grass, 2 to 6 inches high, dense cover, not grazed.				0604	1.00	.18		0639	.6113	.0315						
				0606	1.80	.24		0641	.7109	.0535						
				0610	2.25	.39		0642	.7681	.0659						
				0614	1.05	.46		0644	.7326	.0909						
				0618	.60	.50		0646	.7152	.1150						
				0626	.30	.54		0648	.8137	.1405						
				0630	.45	.57		0649	.8276	.1542						
				0632	3.00	.67		0650	.7239	.1671						
				0636	4.65	.98		0652	.6314	.1897						
				0638	3.60	1.10		0654	.5567	.2095						
				0640	2.10	1.17		0656	.4834	.2268						
				0642	1.50	1.22		0658	.4253	.2420						
				0644	.90	1.25		0700	.3558	.2550						
				0648	.60	1.29		0702	.3065	.2660						
				0700	.25	1.34		0706	.2335	.2837						
				0820	.04	1.39		0712	.1489	.3025						
				1200	.04	1.40		0715	.1176	.3092						
				1320	.02	1.42		0719	.0921	.3162						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.245. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994. P. 42.31-4																

1964			SELECTED RUNOFF EVENT			RIESEL (WACO), TEXAS			WATERSHED P-4			42.34	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
			Event of April 26, 1964 - Continued										
							4-26	0729	.0559	.3279			
								0739	.0347	.3355			
								0749	.0228	.3403			
								0759	.0156	.3435			
								0819	.0082	.3475			
								0844	.0033	.3499			
								0914	.0020	.3512			
								1000	.0009	.3523			
								1400	.0009	.3560			
								1900	.0000	.3584			

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.245.



RIESEL (WACO), TEXAS WATERSHED P-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA						WATERSHED W-3					
						AREA—481 ACRES											
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	P 1/2 Q	2/.00	2/.47 .00	2/1.38 .00	1.14 .00	1.13 .00	6.01 1.63	3.86 .55	5.63 1.20	1.70 .06	.08 .00	2/.52 .00	2/.00 .00	21.92 3.44			
STA AVG P (39-64)		.29	.48	1.13	1.98	3.38	4.84	2.81	2.76	2.59	1.13	.63	.37	22.39 3.27			
MEAN P 3/ 72 YR		.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	8-17	.30	6-11	.24	6-11	.45	6-11	.72	6-11	.73	6-11	.73	6-11	.94	6-11	1.33	
MAXIMUMS FOR PERIOD OF RECORD																	
1940 TO 1964	7-3 1959	2.00	7-3 1959	4/1.32 1951	6-1 1951	1.73	6-1 1951	2.35	6-15 1957	3.12	6-15 1957	3.52	6-15 1957	4.69	6-10 1957	4.80	
NOTES: Watershed conditions: crops including corn, sorghum, alfalfa and meadow were in good condition. Fallow fields had no cover. Pastures good to excellent. 1/ Arithmetic averages of rain gages A-12-R, B-10-R, B-31-R and B-36-R. Months of Jan., Feb., Mar. and Dec. may include snow and snow melt. 2/ Based on meteorological station records. 3/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr. 4/ One hour maximum volume of 1.32 in. also recorded on July 10, 1951.																	

1964 DAILY AIR TEMPERATURE (degrees F)												HASTINGS, NEBRASKA												WATERSHED W-3												44.1													
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
1	34	24	53	14	53	27	75	35	66	41	68	43	89	64	95	73	81	68	78	57	72	38	28	20	1	34	24	53	14	53	27	75	35	66	41	68	43	89	64	95	73	81	68	78	57	72	38	28	20
2	55	28	59	20	54	27	77	52	66	48	61	41	92	60	98	77	90	70	85	41	72	43	36	17	2	55	28	59	20	54	27	77	52	66	48	61	41	92	60	98	77	90	70	85	41	72	43	36	17
3	63	28	38	29	65	32	70	38	74	65	71	45	92	66	104	71	93	70	68	46	78	47	21	16	3	63	28	38	29	65	32	70	38	74	65	71	45	92	66	104	71	93	70	68	46	78	47	21	16
4	46	18	34	25	35	24	41	28	75	45	76	56	92	67	97	73	85	52	75	39	60	35	16	12	4	46	18	34	25	35	24	41	28	75	45	76	56	92	67	97	73	85	52	75	39	60	35	16	12
5	53	22	46	19	38	15	32	28	73	60	60	47	95	71	88	62	75	57	64	33	55	34	23	8	5	53	22	46	19	38	15	32	28	73	60	60	47	95	71	88	62	75	57	64	33	55	34	23	8
6	43	16	52	24	59	30	52	31	81	51	71	51	104	77	91	67	73	57	62	37	56	42	33	14	6	43	16	52	24	59	30	52	31	81	51	71	51	104	77	91	67	73	57	62	37	56	42	33	14
7	44	19	30	11	32	15	50	32	74	49	80	58	100	67	86	73	84	70	69	36	62	40	39	23	7	44	19	30	11	32	15	50	32	74	49	80	58	100	67	86	73	84	70	69	36	62	40	39	23
8	42	27	35	12	33	20	41	21	85	62	84	74	95	62	87	60	90	59	78	37	66	42	44	23	8	42	27	35	12	33	20	41	21	85	62	84	74	95	62	87	60	90	59	78	37	66	42	44	23
9	30	7	40	22	33	14	50	26	67	45	95	61	87	70	83	63	95	64	56	25	71	37	46	17	9	30	7	40	22	33	14	50	26	67	45	95	61	87	70	83	63	95	64	56	25	71	37	46	17
10	32	14	48	27	43	20	68	34	74	46	78	49	90	67	93	65	93	59	58	35	66	40	49	25	10	32	14	48	27	43	20	68	34	74	46	78	49	90	67	93	65	93	59	58	35	66	40	49	25
11	35	8	33	12	44	28	75	49	81	49	75	60	82	64	94	58	64	49	65	45	73	36	37	18	11	35	8	33	12	44	28	75	49	81	49	75	60	82	64	94	58	64	49	65	45	73	36	37	18
12	13	-3	42	32	48	27	70	45	75	41	88	60	82	63	74	44	60	47	67	41	71	39	52	27	12	13	-3	42	32	48	27	70	45	75	41	88	60	82	63	74	44	60	47	67	41	71	39	52	27
13	7	-12	36	18	68	37	67	42	62	35	83	61	79	59	75	54	67	52	69	48	57	28	38	11	13	7	-12	36	18	68	37	67	42	62	35	83	61	79	59	75	54	67	52	69	48	57	28	38	11
14	22	9	43	19	57	25	45	33	71	48	80	62	85	62	70	55	73	50	70	41	64	39	44	14	14	22	9	43	19	57	25	45	33	71	48	80	62	85	62	70	55	73	50	70	41	64	39	44	14
15	41	11	37	23	50	20	64	39	80	55	80	59	90	67	65	54	80	54	72	44	70	33	36	19	15	41	11	37	23	50	20	64	39	80	55	80	59	90	67	65	54	80	54	72	44	70	33	36	19
16	40	11	27	1	62	34	80	46	89	58	74	61	91	69	68	59	68	54	77	45	48	28	49	3	16	40	11	27	1	62	34	80	46	89	58	74	61	91	69	68	59	68	54	77	45	48	28	49	3
17	47	14	33	8	50	24	91	50	85	61	84	68	94	69	70	60	68	55	81	46	39	29	8	-7	17	47	14	33	8	50	24	91	50	85	61	84	68	94	69	70	60	68	55	81	46	39	29	8	
18	53	24	40	28	51	26	58	39	92	63	88	72	94	64	70	62	69	55	63	37	46	27	6	-11	18	53	24	40	28	51	26	58	39	92	63	88	72	94	64	70	62	69	55	63	37	46	27	6	
19	52	31	35	22	70	45	59	43	90	57	86	59	90	74	77	60	75	56	60	32	35	24	25	22	19	52	31	35	22	70	45	59	43	90	57	86	59	90	74	77	60	75	56	60	32	35	24	25	
20	48	18	30	10	49	20	52	48	85	60	91	63	94	71	84	63	75	47	59	30	41	20	37	1	20	48	18	30	10	49	20	52	48	85	60	91	63	94	71	84	63	75	47	59	30	41	20	37	1
21	64	27	23	9	25	12	70	43	89	63	87	58	99	68	78	52	67	51	81	42	22	-1	37	20	21	64	27	23	9	25	12	70	43	89	63	87	58	99	68	78	52	67	51	81	42	22	-1		
22	57	29	31	12	38	19	67	35	90	66	80	60	102	72	77	55	65	56	70	33	27	7	57	26	22	57	29	31	12	38	19	67	35	90	66	80	60	102	72	77	55	65	56	70	33	27	7		
23	47	16	38	5	56	42	64	40	93	65	81	55	103	68	72	51	74	48	58	30	56	20	69	45	23	47	16	38	5	56	42	64	40	93	65	81	55	103	68	72	51	74	48	58	30	56	20		
24	32	9	22	6	46	15	66	48	95	51	81	58	102	68	80	60	67	44	60	38	48	20	78	18	24	32	9	22	6	46	15	66	48	95	51	81	58	102	68	80	60	67	44	60	38	48	20		
25	33	17	50	14	25	10	68	55	80	51	87	59	93	68	85	49	73	51	73	45	51	23	39	10	25	33	17	50	14	25	10	68	55	80	51	87	59	93	68	85	49	73	51	73	45	51	23		
26	49	20	19	5	17	3	78	59	95	65	90	60	87	65	73	52	84	59	65	39	68	14	28	2	26	49	20	19	5	17	3	78	59	95	65	90	60	87	65	73	52	84	59	65	39	68	14		
27	40	18	32	14	46	12	70	44	74	52	88	62	91	67	84	65	79	34	64	37	29	17	31	9	27	40	18	32	14	46	12	70	44	74	52	88	62	91	67	84	65	79	34	64	37	29			
28	27	5	40	19	45	18	48	38	57	51	92	66	86	68	77	49	65	37	68	35	45	11	33	26	28	27	5	40	19	45	18	48	38	57	51	92	66	86	68	77	49	65	37	68	35				
29	43	13	48	24	45	28	62	36	68	46	91	62	91	61	78	68	68	41	61	29	30	13	35	26	29	43	13	48	24	45	28	62	36	68	46	91	62	91	61	78	68	68	41	61	29				
30	53	18	---	---	30	15	63	45	60	50	89	68	86	68	83	54	75	49	65	43	20	1	31	10	30	53	18	---	---	30	15	63	45	60	50	89	68	86	68	83	54	75	49	65	43	20			
31	55	19	---	---	51	31	---	---	65	36	---	---	95	73	80	57	---	---	---	---	---	---	---	14	31	55	19	---	---	51	31	---	---	6															

1964 DAILY PRECIPITATION (inches)						HASTINGS, NEBRASKA WATERSHED W-3 44.1						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.65	.00	.00	.00	.00	.00
2	.00	.04	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00
3	.00	.17	.00	T	.00	.02	.00	.00	.17	.00	.00	.00
4	.00	.00	T	.08	.00	1.15	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.11	.06	.00	.00	.00	.68	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	1.05	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.40	.00	.00	.00	.00	.00
8	.00	.00	.01	.00	.00	.00	.14	.00	.00	.00	.00	.00
9	T	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.30	.00	.10	.00	.00	.00
11	.00	.00	.05	.00	.26	2.36	.53	.00	.00	.08	.00	.00
12	T	.00	.00	.05	.00	.42	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.37	.00	.03	.00	.00	.00	.00
14	.00	.15	.00	.00	.00	1.12	.00	.02	.00	.00	.09	.00
15	.00	.11	.00	.00	.05	.00	.00	.00	.32	.00	.30	.00
16	.00	.00	.00	.00	.00	.00	.00	.62	.40	.00	.13	.00
17	.00	.00	.00	.00	.00	.00	.00	1.79	.08	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	1.25	.16	.00	.00	.00	.00	.00	.00	.00	T
20	.00	.00	.02	.11	.00	.00	.00	1.49	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	1.00	.00	.00	.10	.00	.00	.00
22	.00	.00	.00	.48	.00	.07	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	T	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.05	.55	.00	1.54	.00	.00	.00	.00	.00
27	.00	.00	.05	.29	.25	.00	1.39	.92	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.03	.00	.09	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.51	.00	.00	.00	.00
TOTAL	T	.47	1.38	1.38	1.17	6.60	4.95	6.49	1.85	0.08	0.52	T
STAAV	.34	.54	1.26	1.92	3.70	4.95	3.23	2.94	2.65	1.17	.64	.37

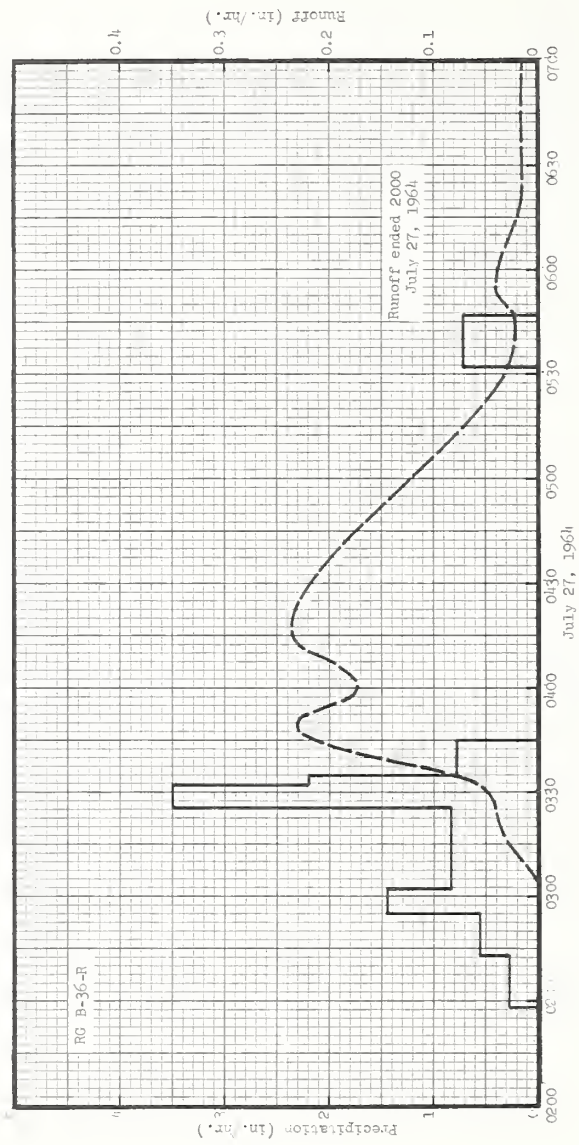
NOTES: STATION AVERAGE IS BASED ON METEOROLOGICAL STATION RECORDS FROM 1943 TO 1964.

SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA WATERSHED W-3 44.1						
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of July 27, 1964												
	4 RG 1/		7-27	RG	B-36-R		7-27	0304	2/ T	.0000		
6-30	.06	.00		0228	.00	.00		0310	.0141	.0007		
7-1	.38	T		0243	.28	.07		0315	.0276	.0024		
7-7	.28	T		0255	.55	.18		0330	.0476	.0118		
7-8	.14	T		0302	1.46	.35		0340	.1540	.0286		
7-10	.50	.01		0326	.83	.68		0345	.2140	.0440		
7-11	.11	T		0332	3.50	1.03		0350	.2310	.0625		
7-26	1.26	.16		0335	2.20	1.14		0400	.1730	.0962		
7-27	.00	T		0345	.78	1.27		0415	.2350	.1472		
				0532	.00	1.27		0420	.2350	.1668		
Watershed conditions:												
Watershed predominately in straight row farming. Cracks from a few inches to 2 to 3 ft. deep appearing in some fields.												
Corn: Poor condition. Ground cover 40%. Last cultivation July 5 and 6.												
Milo: Good field cover and milo 12% headed out. Ground cover 50%. Last cultivation July 15th to 20th.												
Wheat: Harvested, stubble 6" to 10" tall. Ground cover 75 to 90%.												
Fallow: Fields all worked July 12 to 22 with disk or spring tooth tillers.												
Pasture: Overgrazed.												
Meadow: Grass heading out; good condition. 75% estimated cover.												
				0547	.72	1.45		0500	.1220	.2858		
				1147	.00	1.49		0530	.0322	.3243		
				1247	.02	1.51		0540	.0229	.3289		
								0545	.0229	.3308		
								0555	.0402	.3361		
7-27				RG	A-12-R			0605	.0330	.3422		
				0227	.00	.00		0620	.0159	.3483		
				0233	1.10	.11		0630	.0159	.3509		
				0241	.23	.14		0645	.0172	.3551		
				0313	.42	.36		0700	.0154	.3592		
				0346	.49	.63		0730	.0079	.3650		
				0349	1.80	.72		0800	.0047	.3681		
				0353	4.05	.99		0900	.0022	.3716		
				0408	.40	1.09		1030	.0006	.3737		
				0558	.00	1.09		1200	.0002	.3743		
				0601	.80	1.13		2000	.0000	.3749		
				0621	.18	1.19						

NOTES: TO CONVERT RUNOFF IN/HR TO CFS, MULTIPLY BY 4.85. FOR MAP OF W-3, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-1961, USDA MISC. PUB. 994, P. 44.1-4. 1/ ARITHMETIC AVERAGE OF B-36-R, A-12-R, B-10-R AND B-31-R. 2/ RUNOFF PRIOR TO 0304.

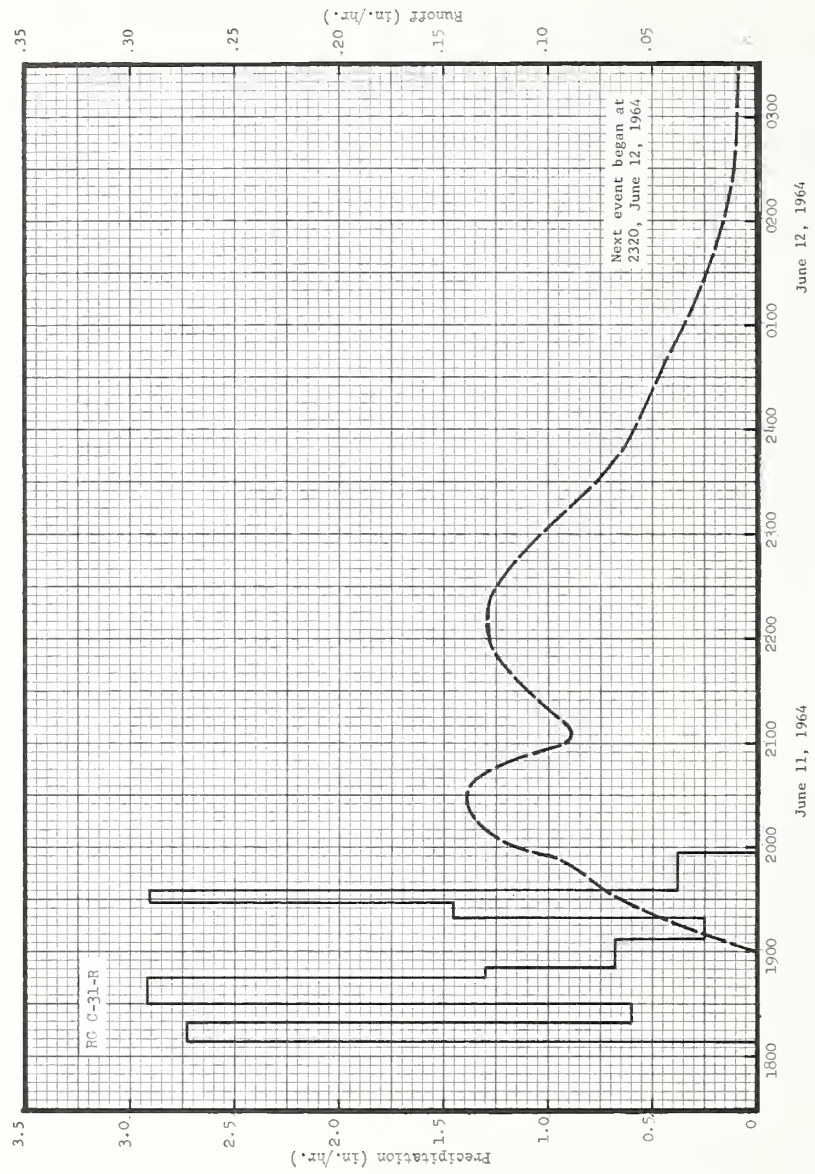
1964 SELECTED RUNOFF EVENT			HASTINGS, NEBRASKA				WATERSHED W-3				44.1
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Watershed conditions: (continued)			Event of July 27, 1964 (continued)								
Sudan: Grazed short; in fair			7-27	RG	B-10-R						
to good condition. 25% cover.				0232	.00	.00					
Land use in percentage of the				0247	.36	.09					
watershed was as follows:				0306	.32	.19					
				0330	.48	.38					
Percent				0338	2.70	.74					
Corn	3			0346	.60	.82					
Milo	27			0416	.08	.86					
Wheat	23			0538	.00	.86					
Fallow	18			0550	.50	.96					
Pasture	19			0600	.12	.98					
Meadow	2										
Sudan	5		7-27	RG	B-31-R						
Farm Yard	1			0244	.00	.00					
Roads	2			0258	.17	.04					
Total	100			0314	.26	.11					
				0330	.57	.26					
				0340	.60	.36					
				0343	4.20	.57					
				0350	1.71	.77					
				0358	.83	.88					
				0548	.00	.88					
				0557	1.07	1.04					
				0804	.00	1.07					
				4RG	AVG 1/	1.19					

NOTES: TO CONVERT RUNOFF IN/HR TO CFS, MULTIPLY BY 485. FOR MAP OF W-3, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-1961, USDA MISC. PUB. 994, P. 44.1-4. 1/ ARITHMETIC AVERAGE OF B-36-R, A-12-R, B-10-R AND B-31-R.



HASTINGS, NEBRASKA WATERSHED W-3

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—2,086 ACRES (3.26 SQ. MILES)										WATERSHED W-8	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	P 1/	2/	2/	2/	1.27	1.18	.89	5.99	3.53	5.41	1.63	.10	2/	2/	20.98		
	Q	.00	.00	.00	.00	.00	.00	1.37	.21E	.71	.05	.00	.00	.00	2.34		
STA AVG P		.30	.50	1.19	1.96	3.35	4.89	2.83	2.80	2.58	1.13	.65	.38	22.56			
(39-64)		.02	.03	.13	.08	.41	1.05	.39	.25	.29	.08	.01	.01	2.74			
MEAN P 3/		.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
72 YR																	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	6-11	.14	6-11	.12	6-11	.23	6-11	.54	6-11	.60	6-11	.60	6-11	.75	6-11	.99	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 TO	7-3	.51	7-3	.42	7-3	.71	6-15	1.67	6-15	2.58	6-15	3.43	6-15	4.86	6-13	4.99	
1964	1959		1959		1959		1957		1957		1957		1957		1957		
NOTES: Watershed conditions: crops including corn, sorghum, alfalfa and meadow were in good condition. Fallow fields had no cover. Pastures good to excellent. For daily air temperature range and daily precipitation at meteorological station, see P. 44.1-1 and 44.1-2. 1/ Arithmetic averages of rain gages A-12-R, B-31-R, C-31-R and D-31-R. Months of Jan., Feb., Mar. and Dec. may include snow and snow melt. 2/ Based on the arithmetic average of the meteorological station and D-31-R. 3/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																	
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA				WATERSHED W-8				44.3			
ANTECEDENT CONOITIONS			RAINFALL						RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of June 11 and 12, 1964																	
5-12	.04	.00	6-11	RG	C-31-R		6-11	1840	.0000	.0000							
5-15	.05	.00		1808	.00	.00		1900	.0001	.0001							
5-26	.28	.00		1819	2.73	.50		1910	.0249	.0021							
5-27	.27	.00		1830	.60	.61		1930	.0656	.0172							
6-3	.05	.00		1845	2.92	1.34		1950	.0893	.0431							
6-4	1.07	.00		1851	1.30	1.47		2000	.1160	.0602							
6-11	4/ .04	.00		1907	.68	1.65		2030	.1390	.1239							
				1919	.25	1.70		2105	.0893	.1925							
				1928	1.46	1.92		2200	.1280	.2950							
				1935	2.91	2.26		2210	.1300	.3165							
			6-11	1957	.38	2.40		2220	.1280	.3380							
				RG	A-12-R			2320	.0864	.4456							
				1801	.00	.00		2400	.0594	.4942							
				1803	3.00	.10		0120	.0275	.5522							
				1816	3.09	.77		0320	.0093	.5890							
				1822	1.10	.88		0620	.0012	.6004							
				1826	1.05	.95		1120	.0003	.6036							
				1830	1.95	1.02		1720	.0001	.6048							
				1837	2.74	1.40		2320	2/	.6051							
				1841	1.20	1.48											
				1847	.50	1.53											
				1853	.30	1.56											
				1859	.20	1.58											
				1904	.48	1.62											
				1907	1.00	1.67											
				1916	.33	1.72											
				1920	1.20	1.80											
				1927	2.57	2.10											
				1933	1.50	2.25											
				2011	.13	2.33											
			6-11	RG	B-31-R												
				1810	.00	.00											
						5/ 2.20											
			6-11	RG	D-31-R												
				1808	.00	.00											
				2000	.00	2.02											
				4 RG	AVG 6/	2.24											
Watershed conditions: (continued)																	
The land use in percentage of the watershed area was as follows:																	
Percent																	
Corn 1																	
Milo 27																	
Oats 1																	
Wheat 17																	
Fallow 17																	
Alfalfa 8																	
Pasture 21																	
Meadow 2																	
Sudan 3																	
Farm Yard 1																	
Roads 2																	
Total 100																	
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2103. FOR MAP OF W-8, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-61, USDA MISC. PUB. 994, P. 44.1-4. 4/ RAINFALL 1130 TO 1140 PRIOR TO EVENT. 5/ CLOCK STOPPED. 6/ ARITHMETIC AVERAGE OF RAIN GAGES A-12-R, B-31-R, B-31-R, C-31-R AND D-31-R. 7/ BEGINNING OF NEXT EVENT.																	



HASTINGS, NEBRASKA WATERSHED W-8

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA				WATERSHED W-11						
						AREA—3,490 ACRES(5.45 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	1 1/2 T 9 .00	2 .00	.43 .00	2/1.19 .00	1.16 .00	.98 .00	5.76 .93	3.40 .11	5.60 .52	1.68 .08	.11 .00	2/.52 .00	2/T .00	20.83 1.64		
STA AVG P (39-64)	.31	.53	1.22	1.96	3.34	4.89	2.83	2.81	2.59	1.14	.67	.40		22.69		
MEAN P 3/ 72 YR	.01	.02	.12	.07	.38	.93	.36	.23	.27	.07	.01	T		2.47		
	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62		23.75		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-12	.05	6-11	.05	6-11	.10	6-11	.27	6-11	.40	6-11	.42	6-11	.52	6-11	.72
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-15 1957	.41	6-15 1957	.40	6-15 1957	.78	6-15 1957	1.83	6-15 1957	2.72	6-15 1957	3.27	6-15 1957	4.87	6-13 1957	4.93
NOTES: Watershed conditions: crops including corn, sorghum, alfalfa and meadow were in good condition. Fallow fields had no cover. Pastures good to excellent. For daily air temperature range and daily precipitation at meteorological station see P. 44.1-1 and 44.1-2. 1/ Arithmetic averages of rain gages A-12-R, B-31-R, D-31-R and G-42-R. Months of Jan., Feb., Mar. and Dec. may include snow and snow melt. 2/ Based on the arithmetic averages of the meteorological station, D-31-R and G-42-R. 3/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA				WATERSHED W-11				44.4		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
6 RG 4/			Event of June 11 and 12, 1964													
5-12	.07	.00	6-11	RG	E-30-R		6-11	1830	.00	.0000						
5-15	.05	.00		1810	.00	.00		1920	.0128	.0016						
5-26	.24	.00		1834	.90	.36		1935	.0098	.0045						
5-27	.26	.00		1844	3.18	.89		1950	.0304	.0095						
6-3	.03	.00		1903	1.04	1.22		2020	.0324	.0252						
6-4	1.04	.00		1922	.25	1.30		2030	.0290	.0303						
6-11	5/.03	.00		1930	2.93	1.69		2050	.0178	.0381						
				1939	2.07	2.00		2110	.0130	.0432						
				2004	.26	2.11		2120	.0130	.0454						
								2230	.0206	.0650						
Watershed conditions:			6-11	RG	A-12-R											
Estimated 25% of W-11 had conservation practices, such as terraces, contouring grassed waterways, etc.				1801	.00	.00		2250	.0240	.0724						
Corn: 6" to 8" high. Fair condition, 6% cover.				1803	3.00	.10		2300	.0307	.0770						
Milo: 2" to 5" high. Fair to good condition. 5% cover.				1816	3.09	.77		2400	.0453	.1149						
Wheat: All headed out. 2 1/2" to 40" tall. Some spots of rather short growth. 85 to 90% cover.				1822	1.10	.88		0030	.0505	.1389						
Fallow: All fields plowed by June 6th some with sweeps of disk or spring tooth. 0% cover.				1826	1.05	.95		0100	.0525	.1647						
Alfalfa: 2nd growth coming on 6" to 10" high, excellent condition. 75% cover.				1830	1.95	1.08		0130	.0529	.1910						
Pastures: Short early grass heading out. Some summer grasses greening up. Most overgrazed. 60% cover.				1837	2.74	1.40		0200	.0517	.2172						
Meadow: Fair, summer grasses slow starting growth 6" to 12". 65% cover.				1841	1.20	1.48		0500	.0350	.3472						
Sudan: Good, 0" to 4" high. Some just planted. 0% to 6% cover.				1847	.50	1.53		0540	.0287	.3685						
				1853	.30	1.56		0610	.0232	.3814						
				1859	.20	1.58		0700	.0104	.3954						
				1904	.48	1.62		0800	.0057	.4035						
				1907	1.00	1.67		0900	.0030	.4078						
				1916	.33	1.72		1030	.0017	.4114						
				1920	1.20	1.80		2400	.0002	.4190						
				1927	2.57	2.10		6-13	0250	7/.0002	.4196					
				1933	.50	2.25										
				2011	.13	2.33										
			6-11	RG	B-31-R											
				1810E	.00	.00										
			6-11	RG	C-31-R											
				1808	.00	.00										
				1819	2.73	.50										
				1830	.60	.61										
				1845	2.92	1.34										
				1851	1.30	1.47										
				1907	.68	1.65										
				1919	.25	1.70										
NOTES: TO CONVERT RUNOFF IN/HR TO CFS, MULTIPLY BY 3519. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-61, USDA MISC. PUB. 994, P. 44.1-4. 4/ ARITHMETIC AVERAGE OF RAIN GAGES A-12-R, B-31-R, C-31-R, D-31-R, E-30-R AND G-42-R. 5/ RAINFALL PRIOR TO 1810. 6/ CLOCK STOPPED. 7/ BEGINNING OF NEXT EVENT.																

1964			SELECTED RUNOFF EVENT			HASTINGS, NEBRASKA			WATERSHED W-11			44.4		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME DF DAY	RATE (cfs)	ACC. (inches)				
Watershed conditions: (continued)			Event of June 11, 1964 (continued)											
The land use in percentage of														
the watershed area was as follows:														
Percent														
Corn	1		6-11		RG	D-31-R								
Milo	29				1808	.00								
Oats	1				2000	2.02								
Wheat	16				RG	G-42-R								
Fallow	15		6-11		1813	.00								
Alfalfa	9				1829	.15								
Pasture	21				1831	.90								
Meadow	3				1836	.24								
Sudan	2													
Farm Yard	1				1841	2.64								
Roads	2				1845	.15								
Total	100				1848	4.60								
					1853	1.80								
					1858	.36								
					1903	2.76								
					1908	.48								
					1927	.06								
					1930	5.00								
					1934	1.95								
					1937	1.20								
					1940	3.20								
					1950	.66								
					2000	.30								
					2012	.20								
					6 RG	AVG 1/	2.15							
NOTES: 1/ ARITHMETIC AVERAGE OF RAIN GAGES A-12-R, B-31-R, C-31-R, D-31-R, E-30-R AND G-42-R.														

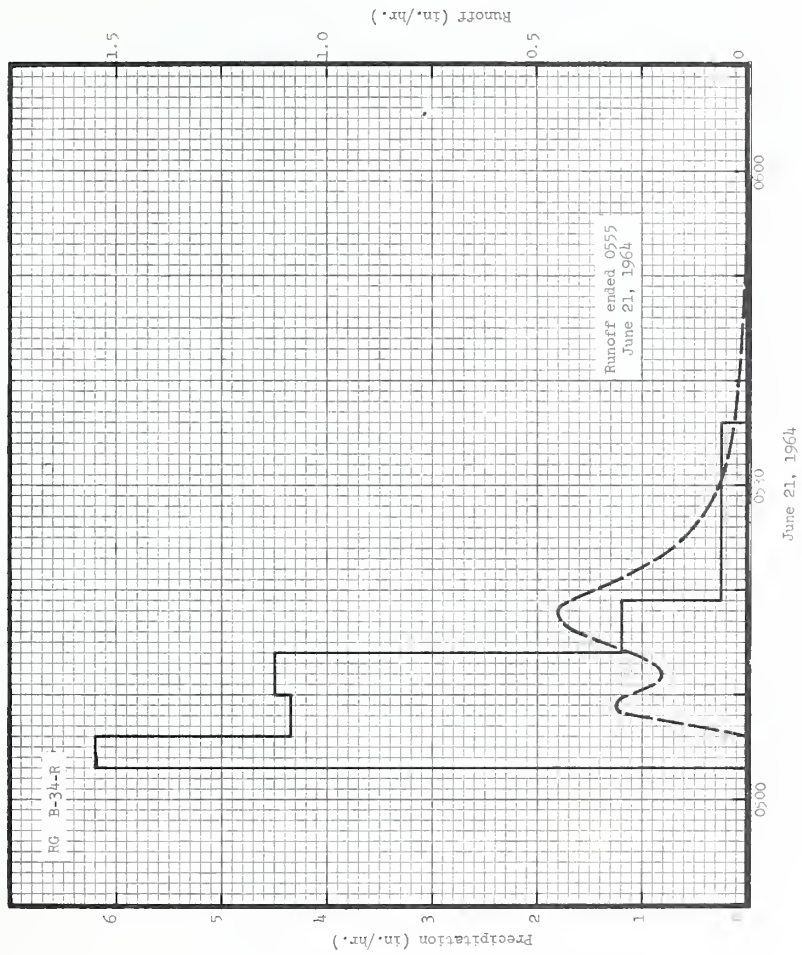


MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA		WATERSHED 1-H										
						AREA—3.62 ACRES												
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964	P	1/	T	1/	.47	1/1.38	1.20	.99	6.09	4.40	5.88	1.66	.10	1/	.52	1/	T	22.69
	Q	.00	.00	.00	.00	.00	.00	.57E	.54	.64E	.00	.00	.00	.00	.00	.00		1.75E
STA AVG	P	.30	.48	1.13	1.95	3.52	4.86	2.80	2.71	2.67	1.21	.65	.38	22.66				
(40-63)	Q	.01	T	.04	T	.02	.10	.06	.01	.01	.01	.00	.00	.26				
MEAN P	3/	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75				
72 YR																		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1964	7-26	1.49	7-27	.32	7-27	.33	7-27	.33	7-27	.33	8-20	.54E	8-20	.54E	8-17	.90E		
2/ MAXIMUMS FOR PERIOD OF RECORD																		
1939 TO 1963	6-16 1957	1.35	6-1 1951	.69	6-1 1951	.89	6-1 1951	.92	6-1 1951	.92	6-1 1951	.92	6-15 1957	.96	6-10 1957	1.13		
NOTES: Watershed conditions: A native grass watershed plowed in May. Sod was very tough and quite rough following three discings and two packings. Planted to forage sorghum and cut for hay. Sod was rough and good cover conditions existed. This is the first year of cultivation for this watershed. Yield 1/2 ton per acre on July 26 and 2 ton per acre on October 5. 1/ Based on meteorological station records. 2/ Covers the period while watershed was in native meadow also see above watershed condition. 3/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																		
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA		WATERSHED 1-H						44.5				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
Event of July 26, 1964																		
7-1	RG B-36-R	.00	7-26	RG	B-36-R	.00	7-26	1653	.000	.00								
7-7	.45	.00		1644	.00	.00		1656	.081	T								
7-8	.29	.00						1658	.441	.01								
7-10	.11	.00		1651	6.69	.78		1701	1.490	.06								
7-10	.50	T		1655	4.35	1.07		1704	.934	.12								
7-11	.17	.00		1658	4.20	1.28		1707	.408	.15								
7-26	4/ .09	.00						1710	.261	.17								
								1713	.116	.18								
								1718	.023	.18								
								1738	.000	.19								
Watershed conditions: Watershed in drilled sudan (7" drill spacing) mowed on July 20. Baled on July 26. Stubble about 2 inches high. Surface dry and no new growth started. Ground cover 10%.																		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.650. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.5-4. 4/ RAINFALL FROM 0310 TO 0340.																		



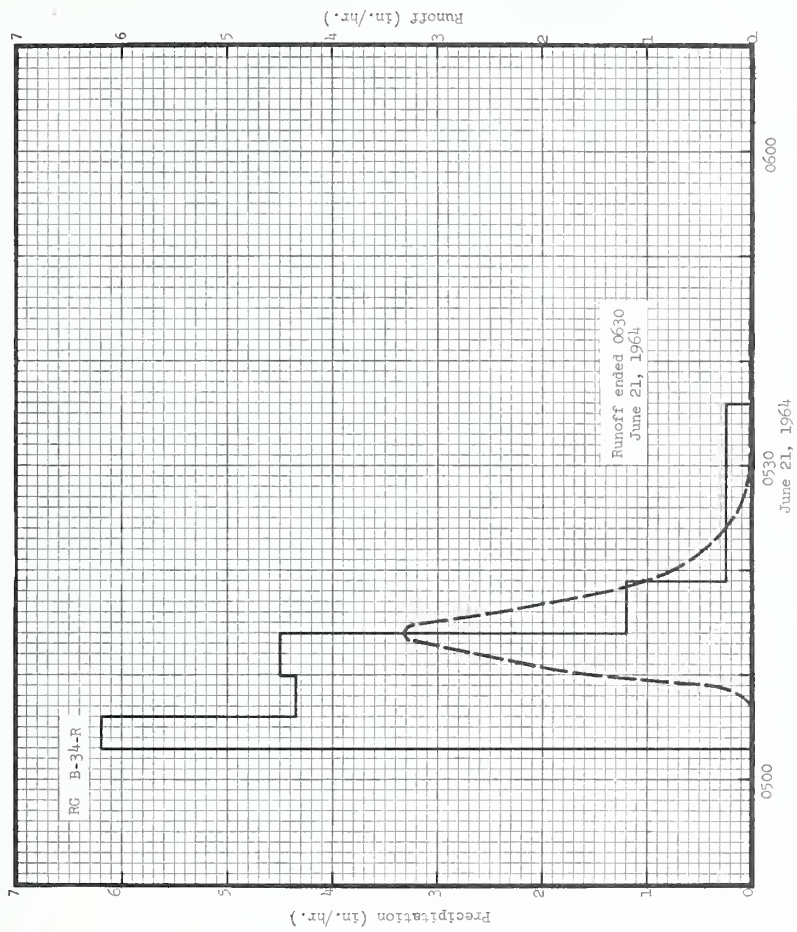
MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA				WATERSHED 2-H					
							AREA—3.40 ACRES									
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P Q 2/ (40-64) 3/ MEAN P 4/ 72 YR	1/ .00 .30 .01	T .47 .52 .01	1/ .00 .00 .01	1/ .47 .52 .01	1.38 .00 .00 .08	1.20 .00 .00 .01	.99 .11 .07 .14	6.09 .07 .07 .15	4.40 .07 .07 .07	5.88 .07 .07 .07	1.66 T .00 .03	.10 .00 .00 T	1/ .00 .72 .00	.52 .00 .41 .00	1/ .00 .41 .00	T .25 23.18 .58
23.75																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-21	.46	6-21	.11	6-21	.11	6-21	.11	6-21	.11	6-21	.11	6-21	.11	6-21	.11
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1964	7-3 1959	2.52	7-3 1959	1.38	7-3 1959	1.41	7-3 1959	1.41	7-3 1959	1.41	7-3 1959	1.41	7-3 1959	1.41	6-27 1959	1.49
NOTES: Watershed conditions: Native grass pasture, good stand and cover conditions throughout year. 1.36 animal units per acre under moderate grazing (1/2 to 2/3 top growth consumed). 1/ Based on meteorological station records. 2/ Station records began April 1, 1939; part year records for 1939 and period of no records, 1955 through 1957, not included in station averages. 3/ Accuracy of runoff records for January 1 to April 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr. (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1964 SELECTED RUNOFF EVENT					HASTINGS, NEBRASKA				WATERSHED 2-H				44-6			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 21, 1964																
	RG B-36-K		6-21	RG	B-34-R5/		6-21	0506	.000	.00						
5-26	.25	.00		0503	.00	.00		0509	.315	.01						
5-27	.40	.00		0506	6.20	.31		0512	.203	.02						
6-4	1.05	.00		0510	4.35	.60		0515	.344	.04						
6-11	2.23	T		0514	4.50	.90		0518	.455	.06						
6-12	.32	.00		0519	1.20	1.00		0521	.315	.07						
6-13	.42	.00		0536	.25	1.07		0525	.154	.09						
6-14	.99	.00						0535	.033	.10						
			6-21	RG	B-36-R	6/ 1.02		0555	.000	.11						
Watershed conditions: 100% native grass pasture. Grass 4" to 10" high with moderate grazing (sheep) in selected areas. Grass in fair to good condition. Good cover 75%.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.428. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.6-3. 5/ LOCATED APPROXIMATELY 25 FT. FROM FLUME OF WATERSHED 4-H, OR 710 FEET SW OF B-36-R. 6/ CLOCK STOPPED.																

Cooperative Research Project of USDA and Nebraska Agricultural Experiment Station



HASTINGS, NEBRASKA WATERSHED 2-H

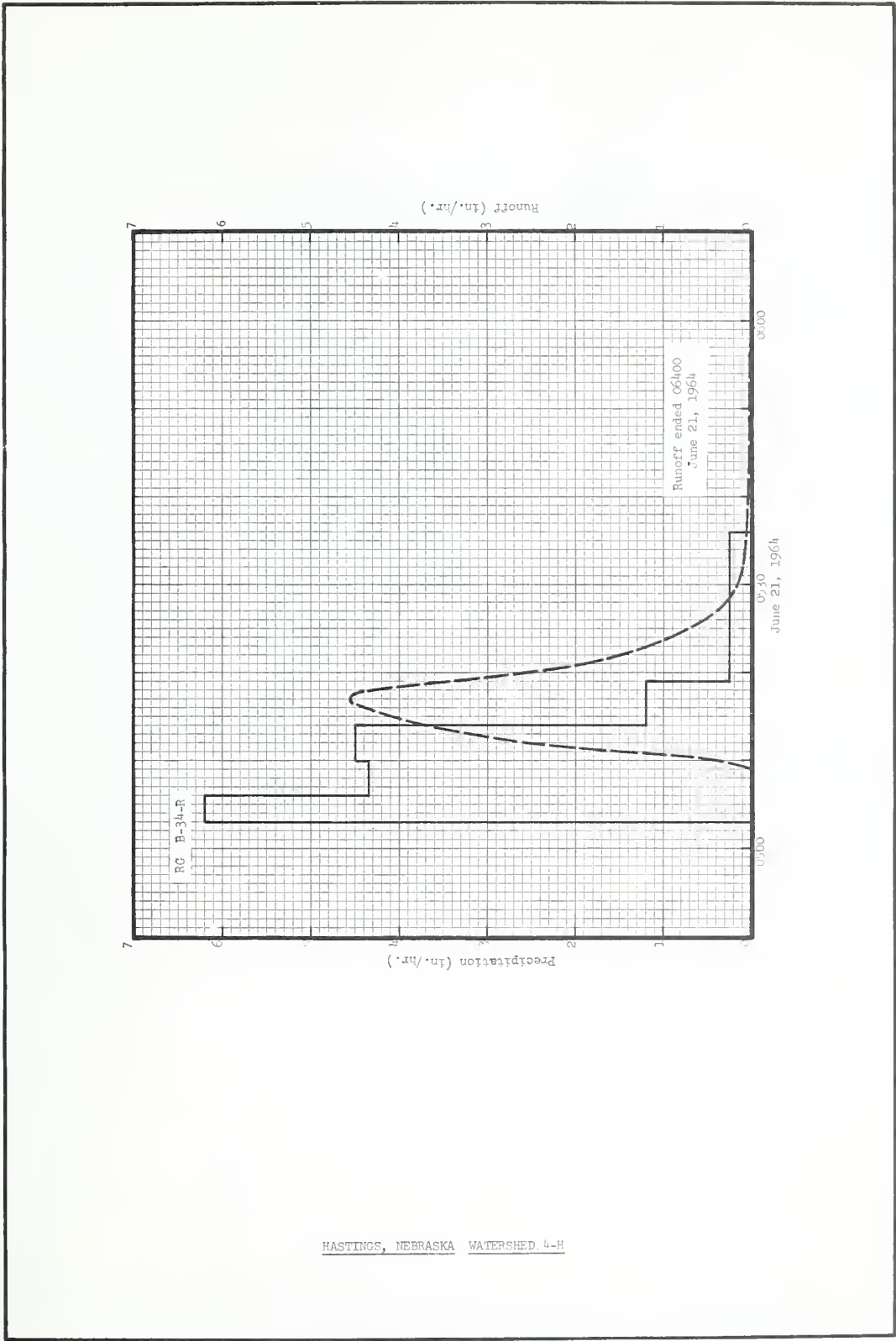
MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA							WATERSHED 3-H				
							AREA—3.77 ACRES											
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964	P	1/	T	1/	.47	1/1.38	1.20	.99	6.09	4.40	5.88	1.66	.10	1/	.52	1/	.00	22.69
	D		.00	.02	.00	.00	.00	1.15	.53E	1.09	.01	.00	.00	.00	.00			2.80
	2/		.30	.52	1.19	1.93	3.43	4.75	3.12	2.90	2.68	1.23	.72	.41			23.18	
	(140-64) 3/		.03	.03	.25	.22	.79	1.48	.80	.42	.51	.24	.04	.00			4.81	
MEAN P 4/			.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62			23.75	
72 YR																		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1964	6-21	3.31	6-21	.44	6-21	.44	8-20	.55	8-20	.55	8-20	.55	8-20	.55	6-11	.71		
MAXIMUMS FOR PERIOD OF RECORD																		
1939 TO 1964	7-3 1959	6.45	7-3 1959	2.34	7-3 1959	2.35	6-1 1951	3.36	6-1 1951	3.74	6-1 1951	3.74	6-1 1951	3.74	6-1 1951	4.31		
NOTES:																		
Cultivated, planted to wheat in Sept. 1963; damaged by hail on June 21, wheat close to maturity. Yield was 10 bu. per acre; estimated hail damage at 80%. General crop rotation of wheat-sorghum-fallow, using minimum tillage practices. 1/ Based on meteorological station records. 2/ Station records began Mar. 27, 1939; part year records for 1939 and period of no records, 1955 through 1957, not included in station averages. 3/ Accuracy of runoff records for Jan. 1 to Apr. 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																		
1964 SELECTED RUNOFF EVENT							HASTINGS, NEBRASKA							WATERSHED 3-H				
ANTECEDENT CONDITIONS							RAINFALL				RUNOFF							
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
							Event of June 21, 1964											
RG B-36-R			6-21	RG	B-34-R5/		6-21	0507	.000	.00								
5-26	.25	.00		0503	.00	.00		0509	.421	.01								
5-27	.40	.00		0506	6.20	.31		0510	1.540	.02								
6-4	1.05	.00		0510	4.35	.60		0511	2.160	.05								
6-11	2.23	.33		0514	4.50	.90		0514	3.310	.19								
6-12	.32	.07		0519	1.20	1.00		0516	2.450	.29								
6-13	.42	.04		0536	.25	1.07		0518	1.400	.35								
6-14	.99	.27						0521	.606	.40								
								0526	.106	.43								
								0531	.026	.44								
Watershed conditions: In wheat, all headed out and most heads mature. Nearly ripe but moisture content too high to harvest. 28" to 36" high, in excellent condition with ground cover 85%.			6-21	RG	B-36-R	6/1.02		0546	.004	.44								
								0630	.000	.44								
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.802. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.7-4. 5/ LOCATED APPROXIMATELY 25 FT. FROM FIZME OF WATERSHED 4-H, or 710 FEET SW OF B-36-R. 6/ CLOCK STOPPED.																		



HASTINGS, NEBRASKA WATERSHED 3-H

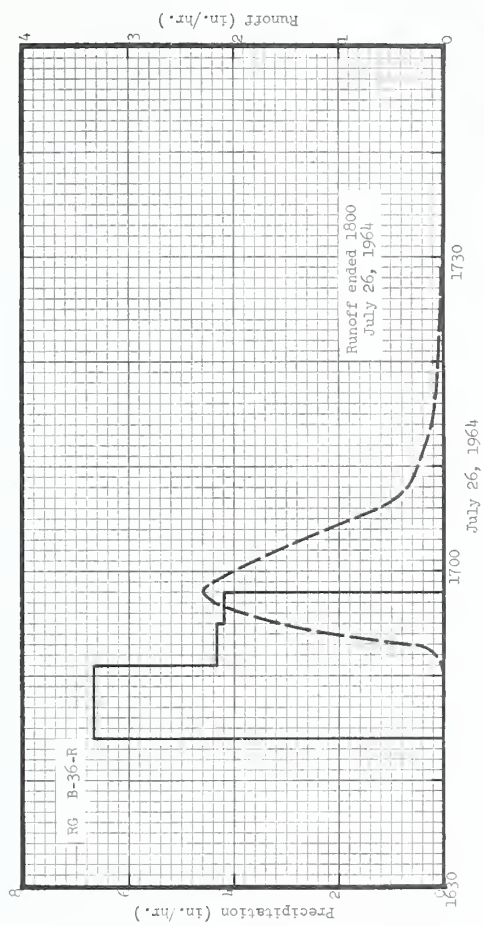
MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA				WATERSHED 4-H							
							AREA—3.64 ACRES											
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1964	P	1/	T	1/	.47	1/1.38	1.20	.99	5.98	4.25	5.81	1.65	.09	1/	.52	1/	.00	22.34
	O	.00	.00	.00	.00	.00	3.20	1.57E	2.56	.12	.00	.00	.00		.00	.00	7.45	
STA AVG	P	.30	.53	1.19	1.97	3.42	4.71	3.10	2.88	2.71	1.22	.71	.40					23.14
	(40-64)	.02	.02	.21	.20	.82	1.27	.73	.40	.47	.20	.02	T					4.36
MEAN P		4/																
72 YR		.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62					23.75
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																		
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL															
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS			
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1964	6-21	4.55	6-21	.71	6-11	1.37	6-11	1.37	6-11	1.37	6-11	1.37	6-11	1.71	6-11	2.32		
MAXIMUMS FOR PERIOD OF RECORD																		
19 40 to	6-26	7.67	7-3	2.13E	7-3	2.15E	6-1	3.19	6-1	3.19	6-1	3.19	6-1	3.19	3-26	3.75E		
19 64	1952		1959		1959		1951		1951		1951		1951		1951			
NOTES: Cultivated, planted to sorghum on May 18. Average yield 53 bu. per acre. Treated for weed control on June 1 with atrazine. General crop rotation of sorghum-fallow-wheat, using minimum tillage practices. 1/ Based on meteorological station records. 2/ Station records began Apr. 1, 1939; part year records for 1939 and period of no records, 1955 through 1957, not included in station averages. 3/ Accuracy of runoff records for Jan. 1 to Apr. 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																		
1964 SELECTED RUNOFF EVENT							HASTINGS, NEBRASKA				WATERSHED 4-H				44.8			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF											
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)								
Event of June 21, 1964																		
	RG B-36-R		6-21	RG	B-34-R2/		6-21	0509	.000	.00								
5-26	.25	.00		0503	.00	.00		0512	2.540	.06								
5-27	.40	.00		0506	6.20	.31		0517	4.550	.36								
6-4	1.05	.00		0510	4.35	.60		0520	2.540	.54								
6-11	2.23	1.45		0514	4.50	.90		0525	.730	.67								
6-12	.32	.20		0519	1.20	1.00		0528	.294	.70								
6-13	.42	.18		0536	.25	1.07		0533	.081	.71								
6-14	.99	.64						0553	.013	.73								
			6-21	RG	B-36-R	6/1.02		0640	.000	.74								
Watershed conditions: In milo, 6" to 10" high and in excellent condition. No tillage operations since planting on May 18. Sprayed with atrazine June 11 for weed control. Ground cover of 8%.																		
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.670. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945 P. 44.8-3. 5/ LOCATED APPROXIMATELY 25 FT. FROM FLUME OF WATERSHED 4-H, OR 710 FEET SW OF B-36-R. 6/ CLOCK STOPPED.																		

Cooperative Research Project of USDA and Nebraska Agricultural Experiment Station



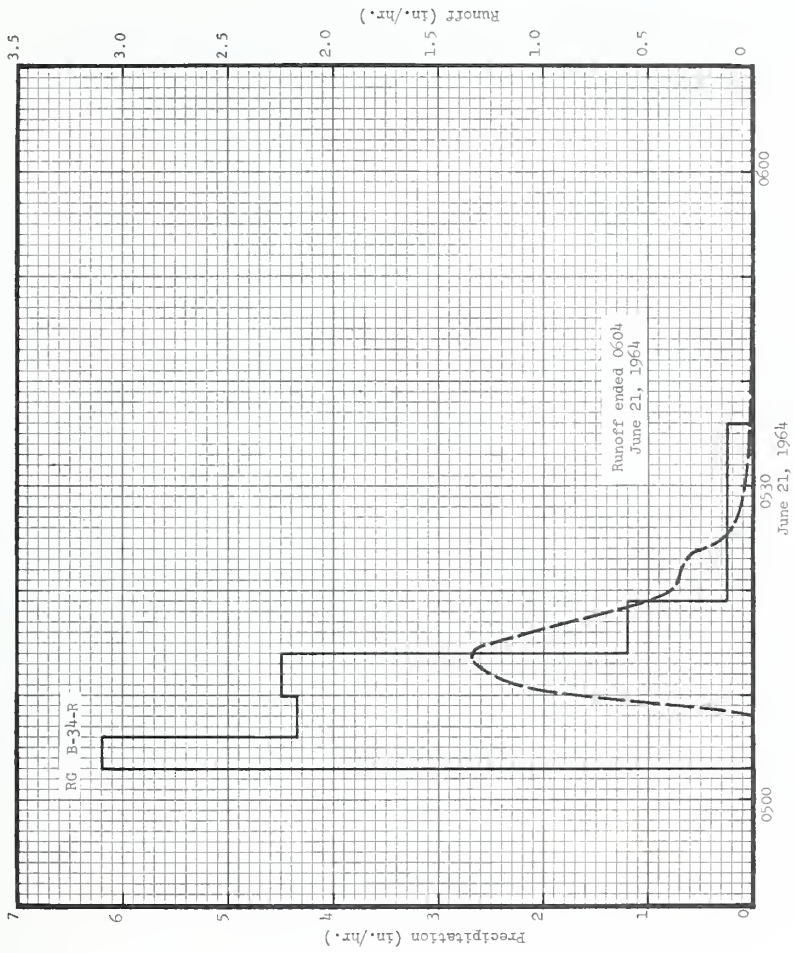
HASTINGS, NEBRASKA WATERSHED 4-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA		WATERSHED 5-H								
						AREA—4.02 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P	1/.00	1/.47	1/1.38	1.20	.99	6.09	4.40	5.88	1.66	.10	1/.52	1/.00	22.69			
Q	.00	.00	.00	.00	.00	.91	1.08	2.07	T	.00	.00	.00	4.06			
2/ STA AVG P (40-64)0	3/.29	.50	1.12	1.88	3.28	4.65	2.98	2.73	2.73	1.16	.65	.37	22.34			
(40-64)0	3/.03	.01	.16	.10	.54	1.07	.50	.31	.26	.11	.02	.00	3.11			
MEAN P 4/ 72 YR	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-20	2.45	8-17	.62	8-17	.80	8-17	.80	8-17	.80	7-26	1.08	7-26	1.08	8-16	1.78
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	6-14 1960	4.24	7-3 1959	1.75	7-14 1952	1.78	6-1 1951	2.58	6-1 1951	2.76	6-1 1951	2.76	6-1 1951	2.76	6-1 1951	3.14
NOTES: Cultivated, very little ground cover, ground worked five times for weed control, seeded to wheat on Sept. 14. General crop rotation of fallow-wheat-sorghum, using minimum tillage practices. 1/ Based on meteorological station records. 2/ Station records began Apr. 1, 1939; part year records for 1939 and period of no record, 1957, not included in station averages. 3/ Accuracy of runoff records for Jan. 1 to Apr. 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA		WATERSHED 5-H				44.9				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 26, 1964																
	RG B-36-R		7-26	RG	B-36-R		7-26	1649	.000	.00						
7-1	.45	T		1644	.00	.00		1652	.099	.01	T					
7-7	.29	.00						1653	.395	.01						
7-8	.11	.00		1651	6.69	.78		1655	1.570	.04						
7-10	.50	.00		1655	4.35	1.07		1658	2.300	.14						
7-11	.17	.00		1658	4.20	1.28		1701	1.790	.24						
7-26	5/.09	.00						1704	1.110	.31						
Watershed conditions: In fallow, using sub-surface, modified minimum tillage practices. A sub-surface tillage sweep used on July 20 followed by a teddar on July 21. No weed growth; an estimated 10% ground cover of milo stalks left on surface on July 26th.											1707	.439	.35			
											1710	.249	.37			
											1718	.065	.39			
											1730	.015	.40			
											1745	.002	.40			
											1800	.000	.40			
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.054. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.9-4. 5/ RAINFALL FROM 0310 TO 0340.																



HASTINGS, NEBRASKA WATERSHED 5-H

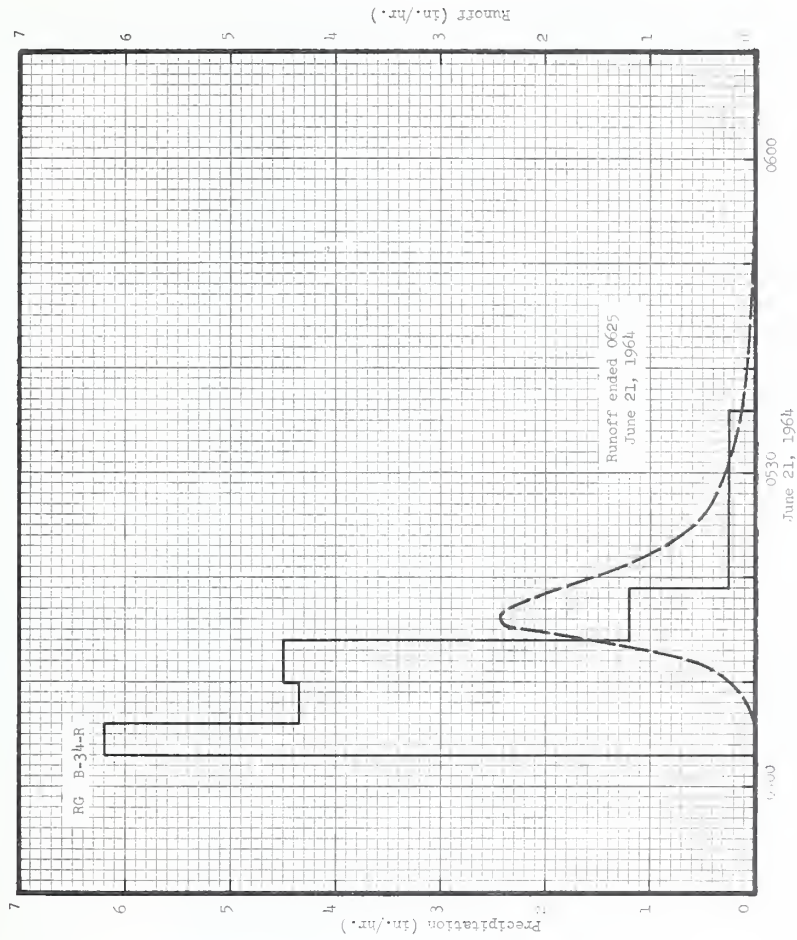
MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—4.01 ACRES WATERSHED 6-H										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P D 2/ STA AVG P (40-64) 3/ MEAN P 4/ 72 YR	1/.00 T .00	1/.47 .00	1/1.38 .00	1.20 .00	.99 .00	6.09 .62	4.40 1.37	5.88 2.08	1.66 T .00	.10 .00	1/.52 .00	1/.00 .00	22.69 4.07			
	.29 .02	.50 .02	1.12 .16	1.88 .10	3.28 .60	4.65 1.13	2.98 .58	2.73 .29	2.73 .41	1.16 .09	.65 .03	.37 .00	22.34 3.43			
	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-27	2.59	7-27	.87	7-27	.94	7-27	.94	7-26	1.32	7-26	1.37	7-26	1.37	8-16	1.78
MAXIMUMS FOR PERIOD OF RECORD																
1939 to 1964	5-22 1954	5.70	7-10 1951	1.66	6-1 1951	2.09	6-1 1951	2.64	6-1 1951	2.80	7-10 1951	2.85	7-10 1951	2.85	7-10 1951	3.53
NOTES: Cultivated, very little ground cover, ground worked five times for weed control, seeded to wheat on Sept. 14. General crop rotation of fallow-wheat-sorghum, using minimum tillage practices. 1/ Based on meteorological station records. 2/ Station records began Apr. 1, 1939; part year records for 1939 and period of no record, 1957, not included in station averages. 3/ Accuracy of runoff records for Jan. 1 to Apr. 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA WATERSHED 6-H 44.10										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG B-36-R		6-21	RG	B-34-R 5/		6-21	0508	.000	.00						
5-26	.25	.00		0503	.00	.00		0511	1.140	.03						
5-27	.40	.00		0506	6.20	.31		0514	1.340	.09						
6-4	1.05	.00		0510	4.35	.60		0517	.890	.15						
6-11	2.23	.18		0514	4.50	.90		0520	.395	.18						
6-12	.32	.04		0519	1.20	1.00		0523	.319	.20						
6-13	.42	.03		0536	.25	1.07		0526	.104	.21						
6-14	.99	.15						0534	.023	.21						
								0604	.000	.22						
Watershed conditions: In fallow; sub surface tillage sweep on June 3. Small weed growth starting after rains of June 12 to 15. Ground cover of 5 to 15% milo residue. Moderate erosion on the steeper slopes.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.044. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.10-4. 5/ LOCATED APPROXIMATELY 25 FT. FROM FLUME OF WATERSHED 4-H OR 710 FT. SW OF B-36-R.																



HASTINGS, NEBRASKA WATERSHED 6-H

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA AREA—4.26 ACRES WATERSHED 7-H										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P	1/.00	1/.47	1/1.38	1.20	.99	6.09	4.40	5.88	1.66	.10	1/.52	1/.00	22.69		
	O		.00	.00	.00	.00	1.56E	.86	1.48	.00	.00	.00	.00	3.90E		
	2/		.29	.50	1.12	3.28	4.65	2.98	2.73	2.73	1.16	.65	.37	22.34		
	STA AVG. P		.02	.15	.10	.56	.86	.47	.21	.39	.09	.03	.00	2.90		
	(40-64) 3/															
	MEAN P 4/		.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	1.39	.87	.62	23.75		
	72 YR															
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-21	2.44	7-27	.60	7-27	.63	7-27	.67	7-26	.75	7-26	.79	7-26	.79	8-16	1.16
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	5-22	4.76	7-3	2.04	7-3	2.06	7-3	2.06	7-3	2.06	7-3	2.06	7-10	2.25	3-26	3.42
	1954		1959		1959		1959		1959		1959		1951		1960	
NOTES: Cultivated, planted to sorghum on May 15, average yield 60 bu. per acre. Treated for weed control on June 1 with atrazine. General crop rotation of sorghum-fallow-wheat, using minimum tillage practices. 1/ Based on meteorological station records. 2/ Station records began Apr. 1, 1939; part year records for 1939 and period of no record for 1957 not included in station averages. 3/ Accuracy of runoff records for Jan. 1 to Apr. 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA WATERSHED 7-H 44.11										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 21, 1964																
	RG B-36-R		6-21	RG	B-34-R 5/		6-21	0506	.000	.00						
5-26	.25	.00		0503	.00	.00		0509	.144	.00 T						
5-27	.40	.00		0506	6.20	.31		0512	.624	.02						
6-4	1.05	.00		0510	4.35	.60		0516	2.440	.12						
6-11	2.23	.50		0514	4.50	.90		0519	1.860	.23						
6-12	.32	.16		0519	1.20	1.00		0522	1.070	.31						
6-13	.42	.03		0536	.25	1.07		0525	.573	.35						
6-14	.99	.40						0528	.372	.37						
								0535	.150	.40						
								0545	.039	.42						
Watershed conditions: In sorghum, planted May 15, 6" to 10" high in excellent condition. No tillage operations following planting. Sprayed with atrazine (weed killer) on June 11. Ground cover of 8%.			6-21	RG	B-36-R	6/ 1.02		0555	.009	.42						
								0625	.000	.42						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.296. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.11-4. 5/ LOCATED APPROXIMATELY 25 FT. FROM FLUME OF WATERSHED 4-H OR 710 FT. SW OF B-36-R. 6/ CLOCK STOPPED.																

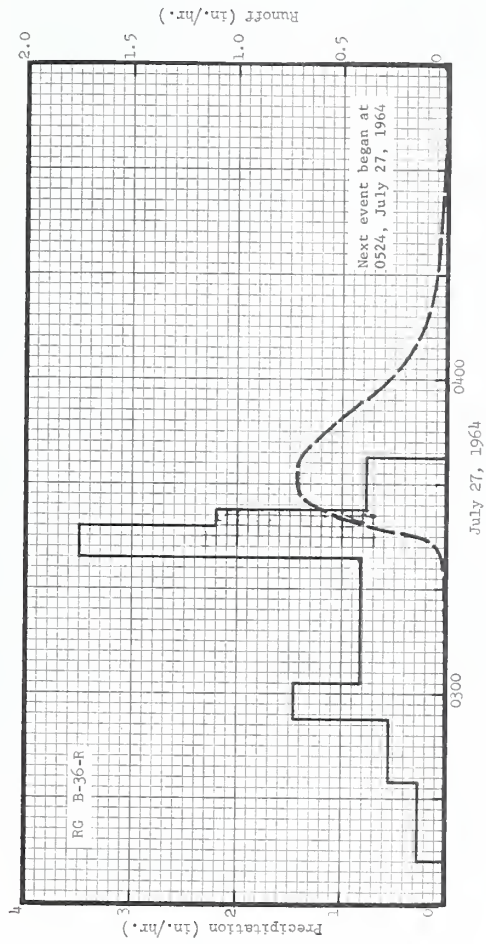
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HASTINGS, NEBRASKA WATERSHED 7-H

MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA		WATERSHED 8-H								
									AREA—3.97 ACRES								
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	P	1/	T	1/	.47	1/1.38	1.20	.99	6.09	4.40	5.88	1.66	.10	1/ .52	1/ .00	22.69	
	D	.00	.00	.00	.00	.00	.44	.39	.64	.00	.00	.00	.00	.00	.00	1.47	
	STA AVG P	.30	.53	1.19	1.97	3.42	4.71	3.10	2.88	2.71	1.22	.71	.40	.40	.40	23.14	
	(40-64) 0.3/	.01	.01	.10	.04	.37	.66	.35	.11	.22	.05	T	.00	.00	.00	1.92	
MEAN P 4/72 YR		.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	.62	.62	23.75	
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	7-27	.71	7-27	.34	8-20	.38	8-20	.40	8-20	.40	8-20	.40	8-20	.40	8-17	.57	
MAXIMUMS FOR PERIOD OF RECORD																	
1939 TO 1964	6-10 1943	3.66	7-3 1959	1.67	7-3 1959	1.70	6-1 1951	2.35	6-1 1951	2.46	6-1 1951	2.46	6-1 1951	2.46	6-1 1951	2.78	
NOTES: Cultivated, planted to wheat in Sept. 1963; damaged by hail on June 21, wheat close to maturity. Yield was 22 bu. per acre; estimated hail damage at 80%. General crop rotation of wheat-sorghum-fallow, using minimum tillage practices. 1/ Based on meteorological station records. 2/ Station records began Mar. 27, 1939; part year records for 1939 and period of no records, 1955 through 1957, not included in station averages. 3/ Accuracy of runoff records for Jan. 1 to Apr. 1 may be in error up to as much as 10 percent of actual. 4/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																	
1964 SELECTED RUNOFF EVENT							HASTINGS, NEBRASKA		WATERSHED 8-H							44.12	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
RG B-36-R			Event of July 27, 1964														
7-1	.45	.00	7-27	RG	B-36-R		7-27	0304	.000	.00							
7-7	.29	.00		0228	.00	.00		0309	.009	.00	T						
7-8	.11	.00		0243	.28	.07		0319	.014	.01	T						
7-10	.50	T		0255	.55	.18		0324	.019	.01	T						
				0302	1.46	.35		0329	.091	.01							
7-11	.17	.00		0326	.83	.68		0334	.538	.04							
7-26	1.37	.02		0332	3.50	1.03		0339	.712	.09							
Watershed conditions: In wheat. Combined on June 27. The 22 bu. per acre yield of wheat did not reflect the residue due to hail damage on June 21. Estimated residue of 6,000 lbs. per acre. Ground cover 90 to 100% residue and annual weed growth. Top soil very dry with cracks 1 to 3 ft. deep.				0335	2.20	1.14		0344	.712	.15							
				0345	.78	1.27		0354	.464	.24							
							0404	.194	.30								
							0424	.039	.34								
							0454	.009	.35								
							0524	.002	.35								
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 4.003. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB 945, P. 44.12-3. 5/ BEGINNING OF NEXT EVENT.																	

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MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA		WATERSHED 18-H								
						AREA—3.74 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P Q	1/. .00	T .00	1/.47 .00	1/1.38 .00	1.15 .00	1.10 .00	5.77 .61	4.82 .46	6.08 .58	1.68 .00	.08 .00	1/.52 .00	1/.00 .00	23.05 1.65		
STA AVG P (40-64) Q	.28 .02	.51 .03	1.22 .04	2.08 .05	3.72 .38	5.11 .89	3.05 .34	3.11 .17	2.73 .15	1.24 .06	.72 .02	.41 .00	24.18 2.15			
MEAN P 3/ 72 YR	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-27	.82	7-27	.30	6-11	.44	6-11	.46	6-11	.46	6-11	.46	6-11	.46	6-11	.49
MAXIMUMS FOR PERIOD OF RECORD																
1939 TO 1964	7-3 1959	2.42	7-3 1959	2.01E	7-3 1959	2.05E	6-1 1951	2.58	6-15 1957	2.71	6-15 1957	2.81	6-15 1957	3.57	6-10 1957	3.58
NOTES: Native grass pasture, heavily grazed, poor cover condition. Increase of annual weeds. 1/ Based on meteorological station records. 2/ Station records began Aug. 1, 1939; part year records for 1939 and period of no record for 1956 not included in station averages. 3/ Mean P based on 72-yr (1893-1964) U.S. Weather Bureau record period at Red Cloud, Nebr.																
1964 SELECTED RUNOFF EVENT						HASTINGS, NEBRASKA		WATERSHED 18-H		44.5						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 27, 1964																
	RG B-39-R		7-27	RG	B-39-R 4/		7-27	0254	.000	.00						
7-1	.65	.00		0222	.00	.00		0257	.005	T						
7-7	.31	.00		0247	.10	.04		0301	.006	T						
7-8	.21	.00		0252	1.68	.18		0312	.025	T						
7-10	.55	.00		0304	.90	.36		0327	.023	.01						
7-11	.18	.00		0326	.52	.55		0330	.074	.01						
7-26	1.32	.13		0336	3.24	1.09		0334	.427	.03						
Watershed conditions: In permanent pasture. Heavy grazing begun in early April. Grass very short by July; turning brown with no green growth prior to event. Ragweed and annuals on the increase; ground cover estimated at 50 to 60%.				0342	1.00	1.19		0337	.655	.06						
				0352	.36	1.25		0341	.822	.10						
				0432	.14	1.34		0342	.822	.12						
								0345	.758	.16						
								0351	.546	.22						
								0357	.324	.27						
								0405	.146	.30						
								0415	.051	.32						
								0430	.012	.32						
								0510	.000	.33						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.771. FOR MAP OF AREA SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-1959, USDA MISC. PUB. 945, P. 44.22-4. 4/ LOCATED 170 FT. E. OF FLUME OF WATERSHED 18-H AND REPLACED RG B-33-R IN APRIL 1963.																

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MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA							WATERSHED 22-H		
							AREA—3.83 ACRES									
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P	1/.00	T .47	1/1.38	1.10	.94	6.15	3.85	5.79	1.53	.08	1/.52	1/.00	21.81			
Q		.00	.00	.00	.00	.02	.00	T	.00	.00	.00	.00	.02			
2/																
STA AVG P	.11	.16	.96	.72	.76	4.93	3.81	4.50	4.39	1.18	.35	.18	22.05			
(62-64) Q	.00	T	.00	.00	.00	.02	.14	.39	.08	.03	.00	.00	.66			
MEAN P 3/																
72 YR	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-21	.04	6-21	.01	6-21	.01	6-21	.01	6-21	.01	6-21	.01	6-21	.01	6-21	.01
MAXIMUMS FOR PERIOD OF RECORD																
1962	8-23	3.16	8-23	1.09	8-23	1.10	8-23	1.11	8-23	1.11	8-23	1.11	8-23	1.11	8-23	1.18
1964	1962		1962		1962		1962		1962		1962		1962		1962	
NOTES: Reseeded to native grasses in 1962. No field operations and no yields. Excellent cover conditions. 1/ Based on meteorological station records. 2/ Station averages and maximums under grass cover began June 1, 1962; for comparative data under cultivation, (1941-1954). See P. 22.26-1 of 1962 volume. 3/ Mean P based on 72-yr (1893-1964) U. S. Weather Bureau record period at Red Cloud, Nebr.																
NO SELECTED RUNOFF EVENT REPORTED FOR 1964. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1962, USDA MISC. PUB. 1070, P. 44.26-3.																

MONTHLY PRECIPITATION AND RUNOFF (inches)						HASTINGS, NEBRASKA				WATERSHED 23-H						
						AREA—4.20 ACRES										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P	1/.00	1/.47	1/1.38	1.10	.94	6.15	3.85	5.79	1.53	.08	1/.52	1/.00	21.81			
STA AVG P	.11	.16	.96	.72	.76	4.93	3.81	4.50	4.39	1.18	.35	.18	22.05			
(62-64) O	.00	T	.00	.00	.00	.04	.22	.41	.08	.02	.00	.00	.77			
MEAN P 3/72 YR	.47	.78	1.19	2.27	3.32	4.28	3.18	2.71	2.67	1.39	.87	.62	23.75			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-21	T	6-21	T	6-21	T	6-21	T	6-21	T	6-21	T	6-21	T	6-21	T
MAXIMUMS FOR PERIOD OF RECORD																
1962 TO 1964	8-23 1962	3.24	8-23 1962	1.12	8-23 1962	1.12	8-23 1962	1.15	8-23 1962	1.15	8-23 1962	1.15	8-23 1962	1.15	8-23 1962	1.24
NOTES: Reseeded to native grasses in 1962. No field operations and no yields. Excellent cover conditions. 1/ Based on meteorological station records. 2/ Station averages and maximums under grass cover began June 1, 1962; for comparative data under cultivation, (1941-1954). See P. 44.27-1 of 1962 volume. 3/ Mean P based on 72-yr (1893-1964) U. S. Weather Bureau record period at Red Cloud, Nebr.																
NO SELECTED RUNOFF EVENT REPORTED FOR 1964. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1962, USDA MISC. PUB. 1070, P. 44.27-3.																

MONTHLY PRECIPITATION AND RUNOFF (inches)							HASTINGS, NEBRASKA								WATERSHED 25-H	
							AREA — 2.24 ACRES									
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P Q 2/ STA AVG P (63-64) MEAN P 3/ 72 YR	1/.00 T .00	1/.47 .00	1/1.38 .00	1.20 .00	.99 .00	6.09 .04	4.40 .01	5.88 .00	1.66 .00	.10 .00	1/.52 .00	1/.00 .00	22.69 .05			
							</									

MONTHLY PRECIPITATION AND RUNOFF (inches) ^{1/}							SAFFORD, ARIZONA WATERSHED 45.001 AREA—519.3 ACRES							45.01
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
YEAR														
P														
Q														
STA AVG P														
Q														
MEAN P														
66 YR	.65	.68	.64	.29	.14	.28	1.75	1.62	1.04	.65	.58	.71	9.03	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-14	.1772	7-14	.0562	7-14	.0657	7-14	.0660E	7-14	.0660E	7-14	.0660E	7-14	.0660E	7-14	.0660E

MAXIMUMS FOR PERIOD OF RECORD 1/													
19	TO												
19													

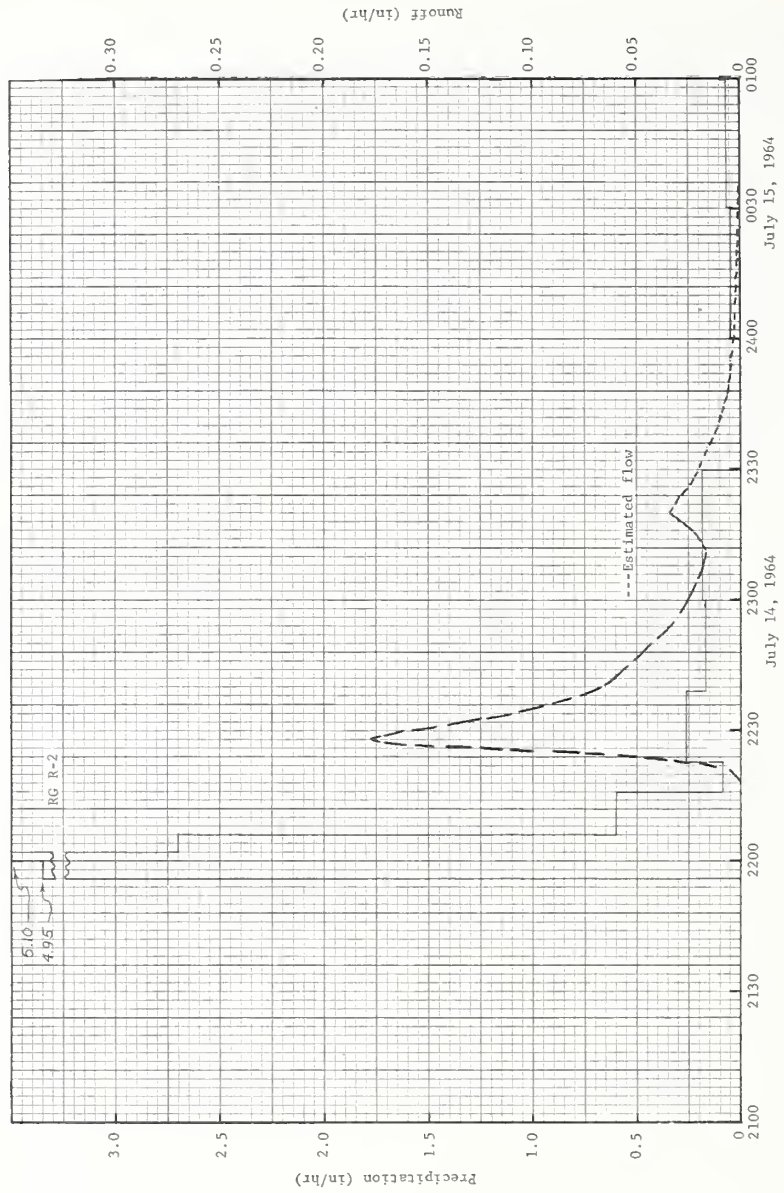
Notes: Quality of Q Data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor ($\pm 15\%$ of actual) for 1939-64. Watershed conditions: 85% of area is bare. Sparse vegetation is predominantly shrubs (creosotebush, snakeweed, and catclaw), with some short grasses (tobosa, three-awn, and curly mesquite). 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 66-yr (1899-1964) U.S. Weather Bureau record period at Safford, Ariz.

1964 SELECTED RUNOFF EVENT				SAFFORD, ARIZONA WATERSHED 45.001				45.01		
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
	RC R-2	.00	7-14	RG	R-2	.00	7-14	2218	.0000	.0000
				2156	.00	.33		2219	.0001	T
				2200	4.95	.50		2220	.0004	T
				2202	5.10	.68		2221	.0056	.0001
				2206	2.70			2222	.0172	.0002
				2216	.60	.78		2223	.0315	.0006
				2223	.09	.86		2224	.0493	.0013
				2239	.26	.92		2225	.0772	.0024
				2300	.17	1.01		2226	.1234	.0041
				2330	.18			2227	.1708	.0065
			7-15	2400	.00	1.03		2228	.1772	.0094
				0030	.04	1.07		2230	.1622	.0151
				0103	.07			2231	.1461	.0177
								2233	.1251	.0222
								2234	.1112	.0242
								2235	.1033	.0260
								2236	.0940	.0276
								2237	.0840	.0291
								2238	.0772	.0305
								2240	.0670	.0329
								2243	.0600	.0361
								2245	.0542	.0380
								2250	.0434	.0421
								2255	.0323	.0453
								2300	.0262	.0477
								2305	.0208	.0497
								2311	.0172	.0516
								2314	.0208	.0525
								2317	.0267E	.0537E
								2320	.0348E	.0552E
								2323	.0308E	.0568E
								2325	.0267E	.0578E
								2330	.0208E	.0598E
								2335	.0162E	.0613E
								2340	.0119E	.0625E
								2345	.0087E	.0634E
								2350	.0065E	.0640E
								2355	.0048E	.0645E
								2400	.0036E	.0649E
								7-15	0010	.0020E
									0020	.0011E
									0035	.0004E
									0050	.0002E
									0100	.0001E
									0115	.0001E
									0125	.0000

Watershed conditions: Area is 85% bare. Sparse vegetation is predominantly shrubs (creosotebush, snakeweed, and catclaw), with some short grasses (tobosa, three-awn, and curly mesquite).

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 523.63. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, FOR 1960-61, USDA MISC. PUB. 994, P. 45.1-4 (REPRINTED). SELECTED EVENT IS FROM RE-EVALUATED DATA.

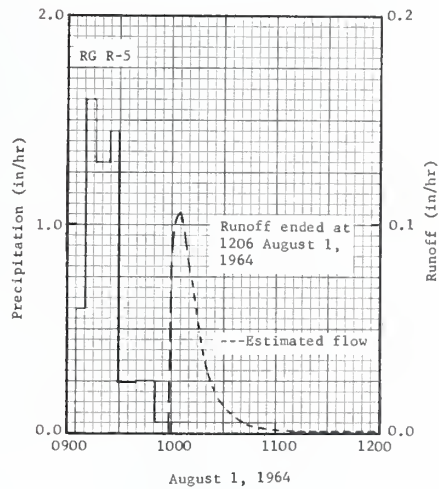
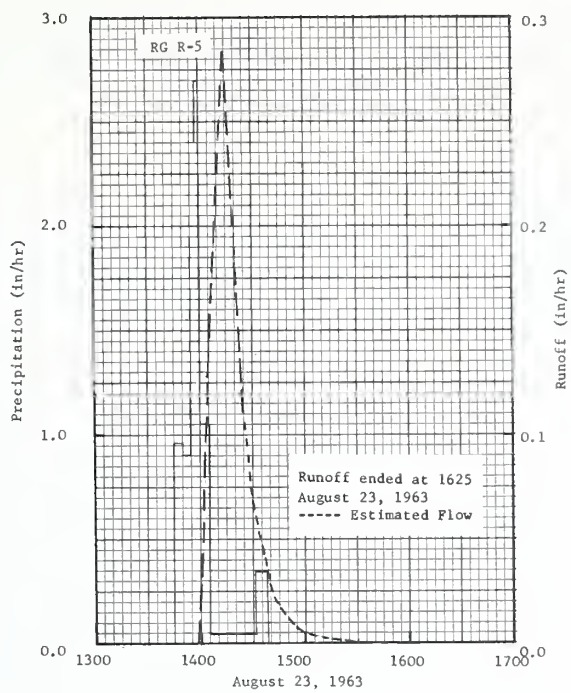
Cooperative Research Project of USDA and Arizona Agricultural Experiment Station



SAFFORD, ARIZONA WATERSHED 45.001

MONTHLY PRECIPITATION AND RUNOFF (inches) ^{1/}						SAFFORD, ARIZONA		WATERSHED 45.002		45.02						
						AREA—682.4 ACRES (1.07 SQ. MILES)										
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
YEAR																
P																
Q																
STA AVG P																
O																
MEAN P ^{2/}																
65 YR	.65	.68	.64	.29	.14	.28	1.75	1.62	1.04	.65	.58	.71	9.03			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-23	.2842	8-23	.0943E	8-23	.0952E	8-23	.0953E	8-23	.0953E	8-23	.0953E	8-23	.0953E	8-23	.0953E
1964	8-1	.1060	8-1	.0324E	8-1	.0329E	8-1	.0329E	8-1	.0329E	8-1	.0329E	8-1	.0329E	7-30	.0615E
MAXIMUMS FOR PERIOD OF RECORD ^{1/}																
19	TO															
19																
NOTES: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor (+15% of actual for 1939-63. Selected Events presented below for 1963 and 1964 were taken from re-tabulated data. Watershed conditions: Sparsely vegetated rangeland. About 75% of area is bare. Vegetative cover is about equally divided between short grasses (black, hairy and side-oats grama) and shrubs (creosotebush, beargrass and mesquite). ^{1/} Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. ^{2/} Mean P based on 65-yr (1899-1963) U.S. Weather Bureau record period at Safford, Ariz.																
GEOLOGY: Surficial deposits that make up 97% of the watershed are Quaternary boulders, gravels, sands, silts, and clay (terrace gravels). The upper third of the watershed has been cut into a 200 foot thick section of relatively recent terrace gravel. Slopes in this area range from 10-35%. The lower two-thirds of the drainage basin has developed on a semi-flat terrace surface that is veneered by a 5 to 15 feet thick terrace gravel deposit. Soil development is poor over the entire watershed. The main channel and a few of the tributaries have cut through the Quaternary deposit into fine grained beds below of Lower and Middle Pleistocene age. These along with the present day stream channels make up the remaining 3% of the surface deposits. All along the northwestern boundary of the watershed a vertical escarpment of 250 ft. exposes the Lower and Middle Pleistocene deposits. The dip of these beds varies from 1° to 3° to the north-west and reflects a primary depositional character. Within these pleistocene sediments numerous coarse channel fill sediments occur. In the vicinity of the watershed they are 240 feet below the surface where they act as good aquifers for subsurface flow. These aquifers consist of poorly cemented, cross-bedded, medium grained sands which are generally 30 to 35 feet thick. These sands are easily eroded where they find surface expression. Piping causes a pock-marked topography. Some of the pipes are 35 to 50 feet deep and have a diameter ranging from 6 inches to 6 feet. Where the pipes come to the surface at various places down slope, they form cavernous openings sometimes 4 feet high by 3 feet wide. These may extend into the side of the clay or sand slope for 25 to 50 feet with only a clay roof. These numerous pipings greatly hasten the rates of erosion as associated strata collapses into the vents. A very rugged topography results. All of the beds are cut by numerous small normal faults. However, in the vicinity of the watershed the faults bear no significant relationship to the subsurface aquifer flow in the Pleistocene beds. Source of Data: Field reconnaissance by project staff.																
1963 SELECTED RUNOFF EVENTS				SAFFORD, ARIZONA		WATERSHED 45.002		45.02								
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of August 23, 1963																
	RG R-5		8-23	RG	R-5		8-23									
7-26	.30	.00		1345	.00	.00		1359	.0000	.0000						
7-26	.04	.00		1350	.96	.08		1400	.0003	.0003 T						
7-27	.12	.00		1356	.90	.17		1401	.0377	.0003						
7-31	.54	.00		1358	2.40	.25		1402	.0718	.0012						
8-4	.40	.0073		1400	2.70	.34		1403	.0916	.0026						
8-5	.03	.00		1404	1.05	.41		1404	.1286	.0044						
8-6	.19	.00		1431	.04	.43		1405	.1402	.0066						
8-9	.03	.00		1438	.34	.47		1410	.2160	.0214						
8-15	.33	T						1415	.2842	.0422						
8-16	.12	.00						1418	.2160	.0547						
8-16	.25	.00						1425	.1101	.0737						
8-22	.46	.00						1426	.1043E	.0755E						
								1428	.0877E	.0787E						
								1430	.0729E	.0814E						
								1432	.0610E	.0836E						
								1434	.0512E	.0855E						
								1436	.0434E	.0871E						
								1438	.0355E	.0884E						
								1440	.0297E	.0895E						
Watershed conditions: Sparsely vegetated rangeland. About 75% of area is bare. Vegetative cover is about equally divided between short grasses (black, hairy and side-oats grama) and shrubs (creosotebush, beargrass and mesquite).																
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 688.08. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 45.2-5. SELECTED EVENTS IS FROM RE-EVALUATED DATA.																

1963			SELECTED RUNOFF EVENTS				SAFFORD, ARIZONA		WATERSHED 45.002		45.02
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNDFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
<u>Event of August 23, 1963--Continued</u>											
							8-23	1445	.0191E	.0915E	
								1450	.0126E	.0928E	
								1455	.0081E	.0937E	
								1500	.0052E	.0943E	
								1505	.0034E	.0947E	
								1510	.0020E	.0949E	
								1515	.0014E	.0950E	
								1520	.0009E	.0951E	
								1525	.0005E	.0952E	
								1530	.0004E	.0952E	
								1535	.0002E	.0952E	
								1540	.0001E	.0952E	
								1550	.0001E	.0952E	
								1600	.0000E	.0952E	
								1625	.0000E	.0953E	
<u>Event of August 1, 1964</u>											
	RG	R-5	8-1	RG	R-5		8-1				
7-2	.12	.00		0905	.00	.00		0958	.000	.0000	
7-7	.36	.00		0911	.60	.06		0959	.053	.0004	
7-8	.28	.00		0917	1.60	.22		1000	.070	.0015	
7-11	.08	.00		0924	1.29	.37		1001	.089	.0028	
7-14	.11	.00		0929	1.44	.49		1003	.103	.0060	
7-15	.62	T		0939	.24	.53		1005	.106	.0095	
7-20	.20	.00		0951	.25	.58		1008	.092	.0144	
7-21	.06	.00		1100	.05	.64		1010	.081	.0173	
7-25	.12	.00						1012	.067E	.0198E	
7-30	.71	.0286						1016	.047E	.0236E	
7-31	.06	.00						1021	.030E	.0268E	
								1031	.013E	.0303E	
								1041	.005E	.0318E	
								1051	.002E	.0324E	
								1101	.001E	.0327E	
								1111	.000E	.0328E	
								1126	.000E	.0328E	
								1159	.000E	.0329E	
								1206	.000E	.0329E	
Watershed conditions: Sparsely vegetated rangeland. About 75% of area is bare. Vegetative cover is about equally divided between short grasses (black, hairy and side-oats grama) and shrubs (creosotebush, beargrass and mesquite).											
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 688.08.											



SAFFORD, ARIZONA WATERSHED 45.002

MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						SAFFORD, ARIZONA WATERSHED 45.004 AREA—764 ACRES (1.19 SQ. MILES) 45.03							
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
P													
Q													
STA AVG P													
O													
MEAN P 2/													
65 YR	.65	.68	.64	.29	.14	.28	1.75	1.62	1.04	.65	.58	.71	9.03

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963 3/	8-26	.047E	NR		NR		NR		NR		NR		NR		NR	
1964	9-14	.052	9-14	.023E	9-14	.024E	9-14	.024E	9-14	.024E	9-14	.024E	9-14	.024E	9-14	.024E

MAXIMUMS FOR PERIOD OF RECORD 1/													
19	TO												
19													

Notes: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor ($\pm 15\%$ of actual) for 1939-64. Watershed conditions: 80% of area is bare. Sparse vegetation is composed entirely of shrubs (creosote-bush, snakeweed, cactus, and mesquite) except for trace of short grasses. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 65-yr (1899-1963) at U.S. Weather Bureau record period, Safford, Ariz. 3/ Known flow on August 26, 1963, peaked at 3.00 ft., but no record due to instrument mal-function.

GEOLOGY: Quaternary gravel, sand, and silt (granite wash) covers the entire watershed. This blanket deposit ranges in thickness from 40 to less than 5 feet in places. The relatively high infiltration capacity, high drainage density, and low slope percent is all a reflection of the governing influence of the granite wash material covering the area. The soil profile is very poorly developed, being only 3 to 6 inches deep in places, predominately in the swales. The granite wash is underlain by a thick sequence of Quaternary and Tertiary deposits of unknown depth. These beds may be in excess of 700 feet thick as determined by seismic methods, however, no complete data are presently available. The dip of these beds is to the northeast. Little tectonic movement is noted in the immediate area. Source of data: Field reconnaissance by project staff.

1964 SELECTED RUNOFF EVENT						SAFFORD, ARIZONA WATERSHED 45.004 45.03				
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
	RG R-11		9-14	RG	R-11		9-14			
8-25	.04	.00		0110	.00	.00		0126E	.000E	.0000
8-26	.06	.00		0114	4.35	.29		0127	.000	.0000
9-8	.25	.00		0118	1.50	.39		0128	.016	.0001
9-9	.22	.00		0121	1.60	.47		0129	.023	.0005
9-12	.40	.00		0123	.60	.49		0130	.025	.0009
				0132	.27	.53		0132	.026	.0017
								0134	.027	.0026
								0136	.026	.0035
								0140	.023	.0051
								0145	.021	.0069
								0150	.017	.0085
								0155	.014	.0098
								0200	.012	.0109
								0201	.022	.0112
								0202	.032	.0117
								0203	.040	.0123
								0204	.044	.0130
								0205	.051	.0137
								0207	.052	.0154
								0208	.050	.0163
								0209	.047	.0171
								0210	.038	.0178
								0211	.034	.0184
								0212	.031	.0189
								0213	.028	.0194
								0214	.025E	.0199E
								0216	.021E	.0206E
								0218	.017E	.0213E
								0220	.014E	.0218E

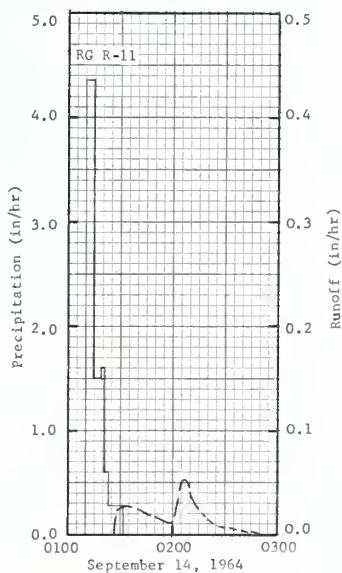
Continued on next page

Watershed conditions: 80 per cent of area is bare. Sparse vegetation is composed entirely of shrubs (creosotebush, snakeweed, cactus, and mesquite) except for trace of short grasses.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 770.36. FOR TOPOGRAPHIC MAP OF WATERSHED (REPRINTED), SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA, MISC. PUB. 994, P. 45.3-4. NO SELECTED EVENT FOR 1963. SELECTED EVENT OBTAINED FROM REVISED DATA.

1964 SELECTED RUNOFF EVENT			SAFFORD, ARIZONA WATERSHED 45.004				45.03			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			<u>Event of September 14, 1964—Continued</u>							
<u>Watershed conditions:</u> 80 per- cent of area is bare. Sparse vegetation is composed entire- ly of shrubs (creosotebush, snakeweed, cactus, and mes- quite) except for trace of short grasses.							9-14			
								0223	.010E	.0224E
								0226	.008E	.0228E
								0229	.006E	.0231E
								0232	.004E	.0234E
								0235	.003E	.0236E
								0238	.002E	.0237E
								0243	.001E	.0238E
								0248	.001E	.0239E
								0253	.000E	.0240E
								0258	.000E	.0240E
								0303	.000E	.0240E
								0308	.000E	.0240E
								0313	.000E	.0241E
								0318	.000E	.0241E
								0323	.000E	.0241E
								0333	.000E	.0241E
								0343	.000E	.0241E
								0353	.000E	.0241E
								0403	.000E	.0241E

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 770.36.

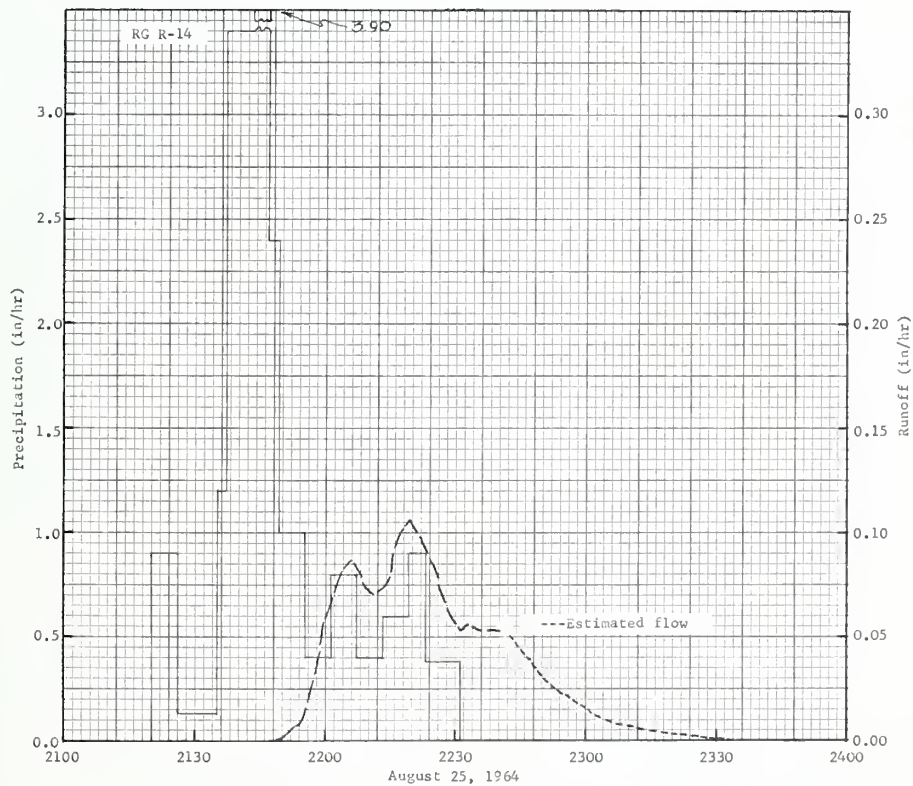


SAFFORD, ARIZONA WATERSHED 45.004

MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						SAFFORD, ARIZONA WATERSHED 45.005 AREA—723 ACRES (1.13 SQ. MILES)								45.04		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
P O																
STA AVG P O																
MEAN P 2/ 66 YR	.65	.68	.64	.29	.14	.28	1.75	1.62	1.04	.65	.58	.71	9.03			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-25	.1058	8-25	.0628E	8-25	.0680E	8-25	.0688E	8-25	.0688E	8-25	.0688E	8-25	.0688E	8-25	.0688E
MAXIMUMS FOR PERIOD OF RECORD 1/																
19	TO															
19																
NOTES: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor (±15% of actual) for 1939-64. Watershed conditions: About 80 percent of area is bare. Vegetation consists mostly of short grasses (black grama, sideoats grama, and tobosa), with some shrubs and forbs. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 66-yr (1899-1964) U.S. Weather Bureau record period at Safford, Ariz.																
1964 SELECTED RUNOFF EVENT						SAFFORD, ARIZONA WATERSHED 45.005 45.04										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of August 25, 1964																
	RG R-12		8-25	RG	R-12		8-25									
7-31	.69	.0035		2220	.00	.00		2128	.0000	.0000						
7-31	.07	.00		2222	3.00	.10		2146	.0002		T					
8-1	.60	.0123		2230	.08	.11		2147	.0002		T					
8-8	.16	.00		2238	1.13	.26		2149	.0011		T					
8-9	.16			2241	3.80	.45		2150	.0019		T					
				2248	2.40	.73		2151	.0030	.0001						
				2252	1.80	.85		2152	.0052	.0002						
				2257	.84	.92		2153	.0070	.0003						
				2302	.36	.95		2154	.0075	.0004						
				2308	1.10	1.06		2155	.0141	.0006						
				2319	.33	1.12		2156	.0221	.0009						
				2331	.50	1.22		2158	.0395	.0019						
				2337	.40	1.26		2159	.0534	.0027						
	RG R-14		8-25	RG	R-14											
7-31	.25	.0035		2120	.00	.00		2200	.0611	.0037						
8-1	.26	.0123		2126	.90	.09		2202	.0721	.0059						
8-8	.14	.00		2135	.13	.11		2205	.0854	.0099						
8-9	.24	.00		2137	1.20	.15		2206	.0867	.0113						
				2143	3.40	.49		2208	.0804	.0141						
				2147	3.90	.75		2209	.0745	.0154						
				2149	2.40	.83		2211	.0710	.0178						
				2155	1.00	.93		2213	.0745	.0202						
				2201	.40	.97		2215	.0854	.0229						
				2207	.80	1.05		2216	.0945	.0244						
				2213	.40	1.09		2217	.1001	.0260						
				2219	.60	1.15		2219	.1058	.0295						
				2223	.90	1.21		2223	.0932	.0362						
				2231	.38	1.26		2225	.0841	.0392						
								2226	.0745	.0405						
								2228	.0633	.0428						
								2231	.0534	.0457						
								2233	.0563	.0475						
								2235	.0534	.0493						
								2241	.0522	.0546						
								2242	.0534	.0555						
								2243	.0493	.0564						
								2245	.0444	.0580						
								2248	.0364E	.0600E						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 729.02. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA, MISC. PUB. 945, P. 45.4-4. SELECTED EVENT IS FROM RE-EVALUATED DATA.																

1964 SELECTED RUNOFF EVENT			SAFFORD, ARIZONA WATERSHED 45.005				45.04		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of August 25, 1964—Continued									
Watershed conditions: Area is about 80% bare. Vegetation consists mostly of short grasses (black grama, side-oats grama, and tobosa), with some shrubs and forbs.							8-25	2251	.0296E .0617E
								2254	.0237E .0630E
								2258	.0188E .0644E
								2303	.0120E .0657E
								2308	.0086E .0666E
								2313	.0062E .0672E
								2323	.0030E .0680E
								2331	.0016E .0683E
								2338	.0011E .0685E
								2348	.0005E .0686E
							8-26	0003	.0002E .0687E
								0018	<.0001E .0687E
								0033	<.0001E .0687E
								0048	.0001E .0687E
								0128	.0000E .0688E

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 729.02.



SAFFORD, ARIZONA WATERSHED 45.005

MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						ALBUQUERQUE, NEW MEXICO WATERSHED 47.001 47.01 AREA—246 ACRES							
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
YEAR													
P													
O													
STA AVG P													
MEAN P 2/	.36	.34	.40	.57	.65	.56	1.41	1.27	.88	.79	.43	.45	8.11
73 YR													

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
			DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	9-5	.0880E	9-5	.0331E	9-5	.0331E	9-5	.0331E	9-5	.0331E	9-5	.0331E	9-5	.0331E	8-29	.0432E
1964	8-3	.1520	8-3	.0964E	8-3	.0964E	8-3	.0965E	8-3	.0965E	8-3	.0965E	8-3	.0965E	8-3	.0965E

MAXIMUMS FOR PERIOD OF RECORD 1/													
19	TO												

Notes: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor ($\pm 15\%$ of actual) for 1939-63. Re-evaluation is incomplete. Selected events in this report obtained from re-evaluated data. Watershed conditions: Sparse vegetation consists of short grasses (blue and black grama), shrubs, and a few small juniper and pinon trees. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Mean P based on 73-yr (1892-1964) U.S. Weather Bureau record period at Albuquerque, N. Mex.

SLOPES:	Slope—Percent	0-3	3-10	10-35
	Percent of area	3	26	74

SOILS: (Revision) Aeolian and residual derived from sandstone and shale.

Soil	Per-cent of area	Avg. depth (in.)	Topsoil		Subsoil		Substratum		Internal drainage
			Structure	Perme-ability	Structure	Perme-ability	Avg. depth to (in.)	Perme-ability	
Rough broken sand-stone land	23	0	-	-	Single grain	Moderately rapid	9	Medium 1/	Medium
Rock outcrop and rough broken sand-stone land	22	0	-	-	Single grain	Moderately rapid	1	Medium 1/	Medium
Rough broken shale land	19	0	-	-	Strong fine platy	Very slow	5	Very slow 2/	Very slow
Preston sand, non-calcareous variant 11-25% slopes	15	5	Single grain	Rapid	Weak coarse subangular blocky	Moderately rapid	29	Rapid	Medium
Progreso fine sandy loam 3-5% slopes	15	5	Single grain	Moderately rapid	Weak coarse subangular blocky	Medium	25	Moderate	Slow
Sandy alluvial land	6	9	Weak coarse subangular blocky	Moderately rapid	Single grain	Rapid	29	Rapid	Medium

1/ Massive sandstone 2/ Shale

EROSION:	Erosion class	1	2	3
	Percent of area	0	20	80

LAND CAPABILITY:	Class	VII	VIII
	Percent of area	36	64

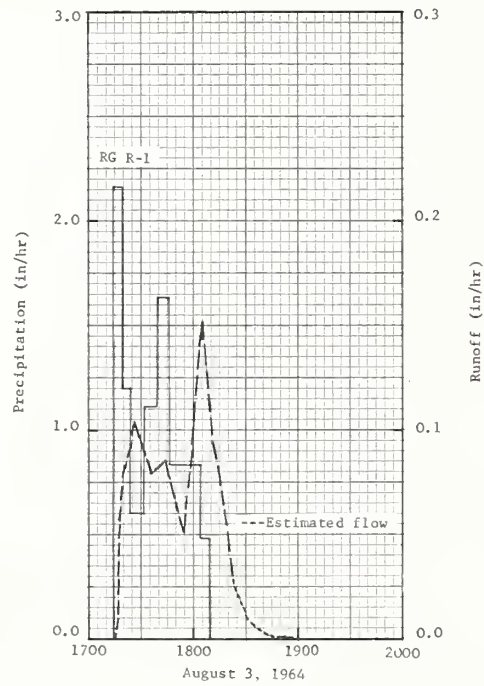
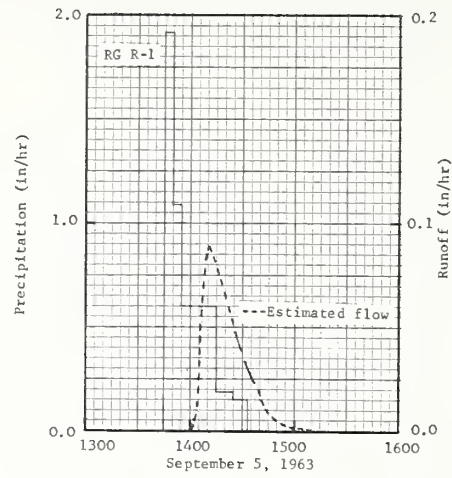
GEOLOGY: Late Jurassic sandstone and Early Cretaceous shales and sandstones outcrop over 60 percent of the watershed. The massive outcrop of Late Jurassic sandstone is 80 to 100 feet thick. The overlying alternating shales and sandstones of Early Cretaceous age are 60 feet thick in the outcrop although the top of the formation has been eroded off. The dip of these beds is 6° to the East and the strike is N 1° E. Overlying the Cretaceous deposits is a wind blown sand varying in depth from 0 to 10 feet. This is a recent deposit which covers about 40 percent of the watershed. The tilting of the Jurassic and Cretaceous beds is the result of a large number of small normal faults which occur less than a mile north of the drainage basin area. Along the southern edge of the watershed small volcanic pipes are observed with some contact metamorphism noted in the Cretaceous shales. Depth and extent of the volcanism is not presently known although the surface expression is limited. The soil profile is poorly developed over most of the area. Steep sided "U" shaped channels have developed in the massive Jurassic sandstone. Alternating shales and sandstones of the Early Cretaceous form benches that retard erosion, therefore, channel development in this formation is rather obscure. Source of data: Field reconnaissance by Project Staff.

GENERALLY REPRESENTS: (Revision) Rio Grande Valley problem area (F10) changed to Southern Oesertic Basins, Plains and Mountains land resource area (D-42).

SPECIAL NOTE: THE DRAINAGE AREA OF WATERSHED W-1 IS IN QUESTION SINCE 1945 AND IS LARGER THAN REPORTED FOR 1946-62. RUNOFF RECORDS AND SELECTED EVENTS PREVIOUSLY PUBLISHED FOR THIS PERIOD SHOULD BE DISREGARDED UNTIL A POSSIBLE RE-EVALUATION CAN BE MADE AND REPORTED.

1963			SELECTED RUNOFF EVENTS				ALBUQUERQUE, NEW MEXICO				WATERSHED 47.001		47.01
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of September 5, 1963													
	RG R-1		9-5	RG	R-1		9-5						
8-11	.14	.00		1345	.00	.00		1400E	.000E	.0000E			
8-12	.04	.00		1350	1.92	.16		1402	.001E	.0000E			
8-12	.08	.00		1355	1.08	.25		1404	.013E	.0002E			
8-20	.59	.013E		1415	.60	.40		1405	.025E	.0006E			
8-25	.26	.00		1425	.18	.43		1407	.053E	.0019E			
8-29	.84	.010E		1433	.15	.45		1411	.088E	.0066E			
								1420	.065E	.0180E			
								1425	.050	.0228			
								1432	.033	.0276			
								1440	.018	.0310			
								1443	.011E	.0317E			
								1448	.006E	.0324E			
								1453	.003E	.0328E			
								1458	.001E	.0330E			
								1503	.001E	.0331E			
								1509	.000E	.0331E			
								1516	.000E	.0331E			
								1524	.000E	.0331E			
								1530	.000E	.0331E			
								1538	.000E	.0331E			
								1551	.000E	.0331E			
Event of August 3, 1964													
	RG R-1		8-3	RG	R-1		8-3						
7-11	.96	NR		1714	.00	.00		1715	.000	.0000			
7-11	.67	NR		1719	2.16	.18		1716	.002	.0000			
7-19	.01	.00		1724	1.20	.28		1717	.012	.0001			
7-23	.02	.00		1732	.60	.36		1718	.046	.0006			
7-27	.02	.00		1739	1.11	.49		1719	.073	.0016			
				1746	1.63	.68		1720	.079	.0029			
				1804	.83	.93		1725	.094	.0101			
				1809	.48	.97		1727	.104	.0134			
								1730	.094	.0183			
								1737	.079	.0284			
								1744	.085	.0379			
								1755	.051	.0504			
								1800	.094	.0564			
								1805	.152	.0667			
								1812	.094	.0811			
								1815	.079	.0854			
								1820	.051	.0908			
								1823	.030	.0928			
								1824	.025E	.0933E			
								1827	.018E	.0943E			
								1830	.011E	.0951E			
								1835	.006E	.0958E			
								1840	.003E	.0961E			
								1845	.001E	.0963E			
								1850	.001E	.0964E			
								1856	.000E	.0964E			
								1903	.000E	.0964E			
								1911	.000E	.0964E			
								1917	.000E	.0964E			
								1925	.000E	.0965E			
								1938	.000E	.0965E			
Watershed Conditions: Sparse vegetation consists of short grasses (blue and black grama), shrubs, and a few small juniper and pinion trees.													
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 248.05. FOR TOPOGRAPHIC MAP OF WATERSHED SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 47.1-4. REVISED TOPOGRAPHIC MAP NOT AVAILABLE. SELECTED EVENTS OBTAINED FROM RE-EVALUATED DATA.													

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 248.05. FOR TOPOGRAPHIC MAP OF WATERSHED SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, USDA, ARS, JAN. 1960, P. 47.1-4. REVISED TOPOGRAPHIC MAP NOT AVAILABLE. SELECTED EVENTS OBTAINED FROM RE-EVALUATED DATA.

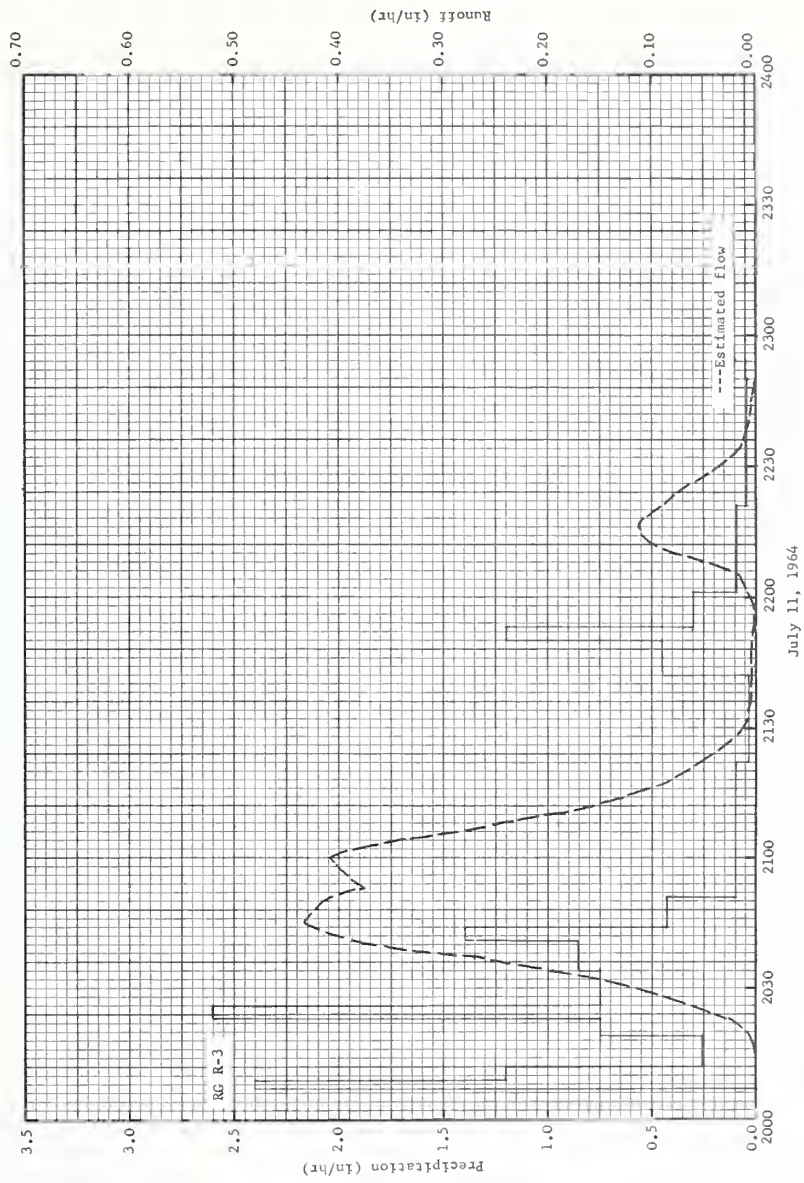


ALBUQUERQUE, NEW MEXICO WATERSHED 47.001

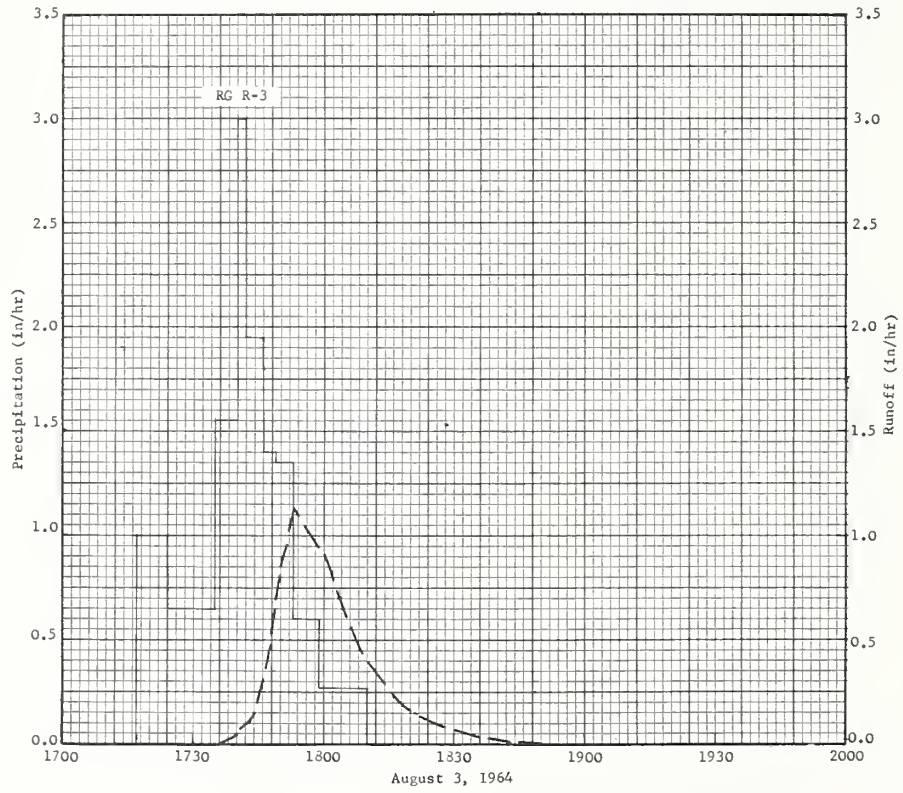
MONTHLY PRECIPITATION AND RUNOFF (inches) 1/							ALBUQUERQUE, NEW MEXICO WATERSHED 47.002 47.02 AREA—40.1 ACRES 2/									
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
P																
Q																
STA AVG P																
MEAN P 3/ 73 YR	.36	.34	.40	.57	.65	.56	1.41	1.27	.88	.79	.43	.45	8.11			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-3	1.13	8-3	.3912	8-3	.3966	8-3	.3966	8-3	.3966	8-3	.4330	8-3	.4330	8-3	.4330
MAXIMUMS FOR PERIOD OF RECORD 1/																
19	TO															
Notes: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor ($\pm 15\%$ of actual) for 1939-64. Watershed conditions: Sparsely vegetated rangeland; about 80% of the area is bare. Vegetation consists of short grasses (blue and black grama, and galleta) and shrubs (sagebrush, saltbush, and rabbit brush). Vegetation is densest along lower two thirds of principal waterway. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Drainage area 40.1, previously reported as 40.5 acres. 3/ Mean P based on 73-yr (1892-1964) U.S. Weather Bureau record period at Albuquerque, N. Mex.																
1964 SELECTED RUNOFF EVENTS				ALBUQUERQUE, NEW MEXICO WATERSHED 47.002 47.02												
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 11, 1964																
7-8	RG R-3 .10	.00	7-11	RG 2007	R-3 .00	.00	7-11	2015	.0000	.0000						
7-9	.48	.0059		2009	2.40	.08		2017	.0014	.00002						
7-11	.52	.0081		2012	1.20	.14		2029	.1080	.0110						
				2019	.26	.17		2031	.1308	.0150						
				2023	.75	.22		2034	.1965	.0232						
				2026	2.60	.35		2037	.2671	.0349						
				2034	.75	.45		2039	.3430	.0451						
				2041	.86	.55		2041	.3846	.0572						
				2044	1.40	.62		2045	.4337	.0846						
				2051	.43	.67		2050	.4018	.1196						
				2122	.10	.72		2053	.3773	.1391						
				2142	.03	.73		2056	.3920	.1585						
				2150	.45	.79		2100	.4092	.1853						
				2153	1.20	.85		2102	.3846	.1986						
				2201	.30	.89		2105	.3136	.2161						
				2221	.09	.92		2108	.2499	.2302						
				2250	.04	.94		2110	.2021	.2378						
				2312	.05	.96		2113	.1465	.2465						
				2400	.05	1.00		2116	.1080	.2529						
								2119	.0740	.2575						
								2122	.0537	.2607						
								2125	.0336	.2629						
								2129	.0176	.2646						
								2134	.0098	.2657						
								2145	.0033	.2670						
								2157	.0014	.2674						
								2159	.0033	.2675						
								2202	.0106	.2678						
								2205	.0165	.2685						
								2207	.0336	.2694						
								2208	.0514	.2701						
								2210	.0796	.2723						
								2213	.1051	.2769						
								2216	.1112	.2823						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 40.43. FOR WATERSHED MAP SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1956-59, MISC. PUBLICATION NO. 945, P. 47.2-4. SELECTED EVENT IS FROM RE-EVALUATED DATA.																

1964 SELECTED RUNOFF EVENTS			ALBUQUERQUE, NEW MEXICO WATERSHED 47.002				47.02		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of July 11, 1964—Continued									
							7-11	2219	.1017
								2224	.0740
								2230	.0336
								2234	.0176
								2239	.0098
								2244	.0052
								2249	.0025E
								2254	.0014E
								2259	.0005E
								2304	.0002E
								2309	.0000E
								2318	.0000E
Event of August 3, 1964									
	RG R-3		8-3	RG	R-3		8-3		
7-8	.10	.0000		1715	.00	.00		1725	.0000
7-9	.48	.0059		1724	1.00	.15		1727	.0000
7-11	.52	.0081		1735	.65	.27		1729	.0014
7-11	1.00	.3000		1740	1.56	.40		1731	.0041
				1742	3.00	.50		1733	.0076
7-19	.01	.0000		1746	1.95	.63		1737	.0106
7-27	.02	.0000		1749	1.40	.70		1739	.0241
				1753	1.35	.79		1740	.0448
				1759	.60	.85		1742	.0796
				1810	.27	.90		1743	.1112
								1744	.1504
								1745	.2399
								1746	.3136
								1747	.4165
								1748	.5537
								1749	.7178
								1750	.8624
								1751	.9628
								1753	1.1319
								1756	1.0314
								1800	.8624
								1803	.7056
								1806	.5366
								1809	.4410
								1813	.3087
								1817	.2127
								1821	.1504
								1825	.1080
								1830	.0686
								1835	.0409
								1840	.0213
								1845	.0124
								1850	.0076
								1855	.0041
								1858	.0029E
								1908	.0006E
								1918	.0001E
								1928	.0000E
Watershed conditions: The area was 80% bare: Vegetation consisted of short grasses (blue and black grama, and galleta) and shrubs (sagebrush, saltbush, and rabbit brush). Vegetation is densest along lower two thirds of principal waterway.									

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 40.43



ALBUQUERQUE, NEW MEXICO WATERSHED 47.002



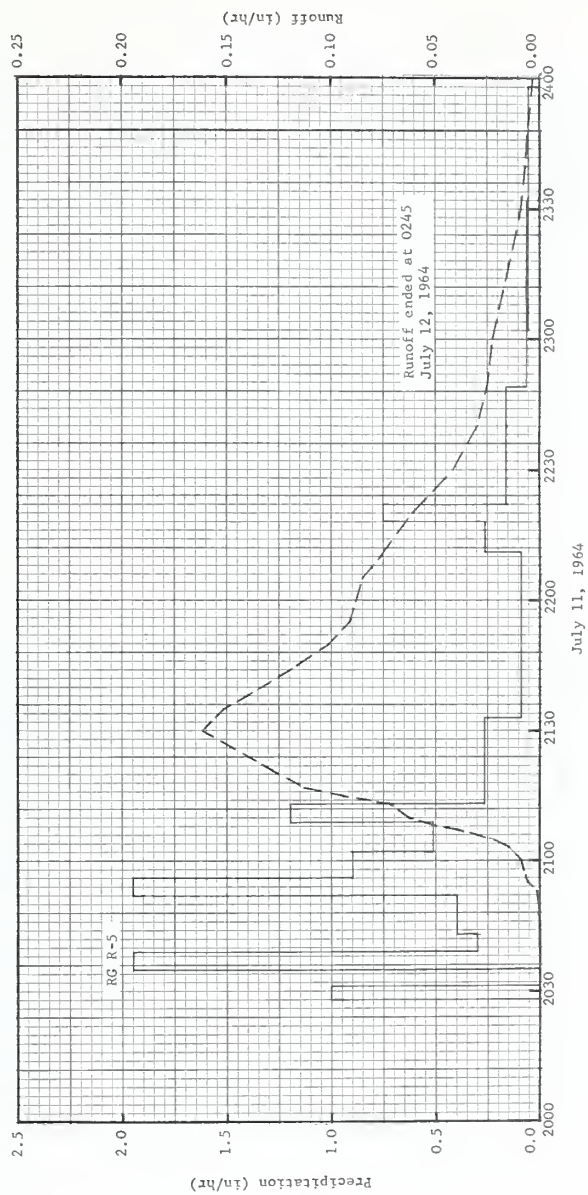
ALBUQUERQUE, NEW MEXICO WATERSHED 47.002

MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						ALBUQUERQUE, NEW MEXICO WATERSHED 47.003 AREA—176 ACRES 2/								47.03		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
P																
Q																
STA AVG P																
MEAN P 3/ 73 YR	.36	.34	.40	.57	.65	.56	1.41	1.27	.88	.79	.43	.45	8.11			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	8-3	.2360	8-3	.1444	8-3	.1671	8-3	.1771	8-3	.1771	8-3	.1771	8-3	.1884	8-3	.1884
MAXIMUMS FOR PERIOD OF RECORD 1/																
19	TO															
19																
Notes: Quality of Q data: (Revision) Re-evaluation of runoff shows accuracy should be reduced to poor (+15% of actual) for 1939-64. Watershed conditions: Sparsely vegetated rangeland; about 75% of area is bare. Vegetation consists of short grasses (blue and black grama and galleta) and shrubs (sagebrush, saltbush, and snakeweed). Vegetation is comparatively heavy in a narrow strip along the principal waterway. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. 2/ Drainage area 176 acres, previously reported as 168.3 acres. 3/ Mean P based on 73-yr (1892-1964) U.S. Weather Bureau record period at Albuquerque, New Mex.																
1964 SELECTED RUNOFF EVENTS				ALBUQUERQUE, NEW MEXICO				WATERSHED 47.003				47.03				
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 11, 1964																
	RG R-5		7-11	RG	R-5		7-11									
7-8	.06	.0000		2028	.00	.00		2042	0.000	.0000						
7-9	.65	.0064		2031	1.00	.05		2045	.000	.0000						
7-11	.39	.0044		2035	.00	.05		2049	.000	.0000						
				2039	1.95	.18		2053	.002	.0001						
				2043	.30	.20		2055	.006	.0002						
				2052	.40	.26		2100	.009	.0009						
				2056	1.95	.39		2103	.015	.0015						
				2102	.90	.48		2105	.024	.0022						
				2109	.51	.54		2107	.039	.0032						
				2113	1.20	.62		2108	.050	.0039						
				2133	.27	.71		2110	.063	.0058						
				2211	.08	.76		2113	.072	.0092						
				2218	.26	.79		2115	.094	.0120						
				2222	.75	.84		2117	.113	.0154						
				2249	.16	.91		2121	.128	.0235						
				2332	.06	.95		2130	.162	.0452						
				2358	.05	.97		2135	.152	.0583						
								2145	.117	.0807						
								2150	.101	.0898						
								2155	.092	.0978						
								2205	.085	.1126						
								2210	.082	.1196						
								2220	.061	.1315						
								2230	.042	.1401						
								2240	.030	.1462						
								2250	.025	.1507						
								2300	.023	.1547						
								2315	.016	.1597						
								2330	.009	.1629						
								2345	.006	.1649						
								2400	.003	.1660						
								0015	.002	.1666						
								0045	.001E	.1672E						
								0115	.000E	.1673E						
								0215	.000E	.1674E						
								0245	.000E	.1674E						
Watershed conditions: Sparsely vegetated rangeland; about 75% of area is bare. Vegetation consists of short grasses (blue and black grama and galleta) and shrubs (sagebrush, saltbush, and snakeweed). Vegetation is comparatively heavy in a narrow strip along the principal waterway.																

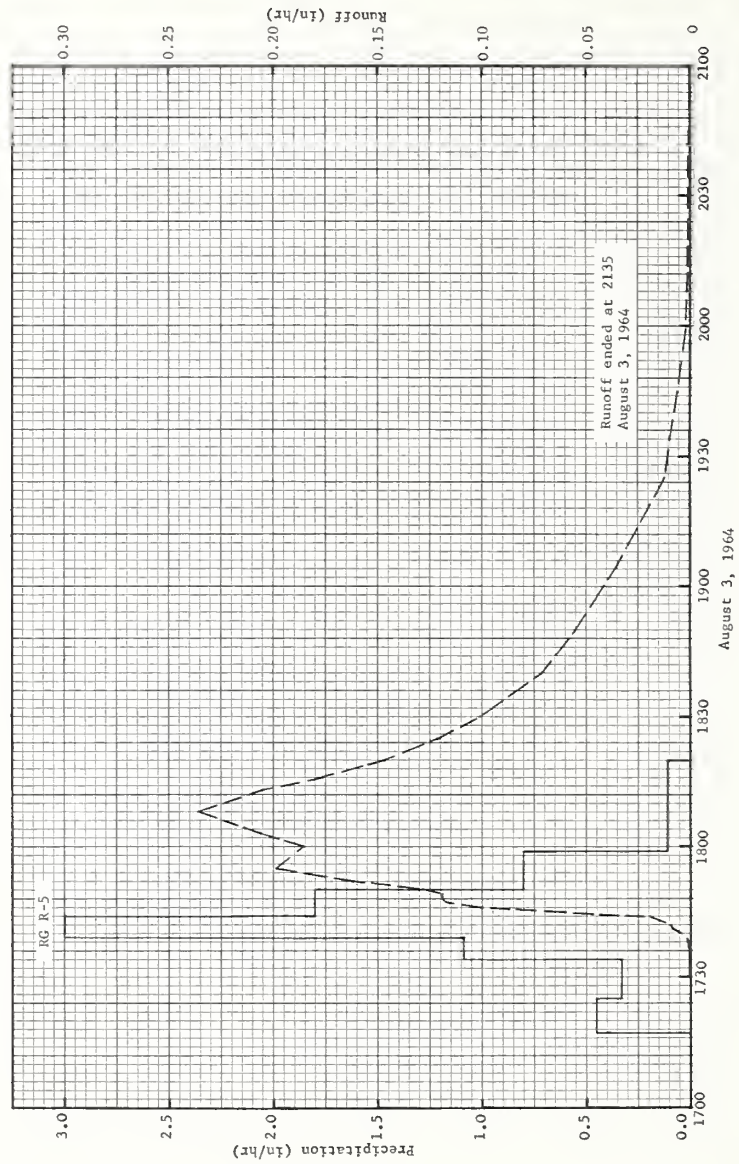
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 177.47. FOR TOPOGRAPHIC MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59. USDA MISC. PUB. 945, P. 47.3-4. SELECTED EVENTS OBTAINED FROM RE-EVALUATED DATA.

1964 SELECTED RUNOFF EVENTS			ALBUQUERQUE, NEW MEXICO				WATERSHED 47.003 47.03			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of August 3, 1964										
	RG R-5		8-3	RG	R-5		8-3	1730	.000	.0000
7-8	.06	.0000		1717	.00	.00		1733	.000	.0000
7-9	.65	.0064		1725	.45	.06		1735	.000	.0000
7-11	.39	.0044		1734	.33	.11		1736	.000	.0000
7-11	.97	.1754E		1739	1.03	.20				
								1737	.001	.0000
7-19	.02	.0000		1744	3.00	.45		1739	.002	.0001
7-27	.01	.0000		1750	1.80	.63		1740	.004	.0301
				1759	.80	.75		1741	.008	.0002
				1820	.11	.79		1742	.009	.0004
								1743	.015	.0006
								1744	.024	.0009
								1745	.060	.0016
								1746	.100	.0029
								1747	.116	.0047
								1748	.119	.0067
								1749	.119	.0087
								1750	.128	.0107
								1752	.162	.0156
								1755	.198	.0245
								1800	.186	.0405
								1803	.206	.0503
								1808	.236	.0687
								1813	.206	.0871
								1816	.177	.0967
								1820	.147	.1075
								1825	.122	.1187
								1830	.101	.1280
								1840	.072	.1424
								1850	.055	.1531
								1905	.035	.1643
								1915	.023	.1690
								1925	.013	.1720
								1945	.006	.1753
								2000	.002	.1763
								2015	.001	.1767
								2045	.000E	.1770E
								2115	.000E	.1771E
								2135	.000E	.1771E
Watershed conditions: Sparsely vegetated rangeland; about 75% of area is bare. Vegetation consists of short grasses (blue and black grama and galleta) and shrubs (sagebrush, saltbush, and snake-weed). Vegetation is comparatively heavy in a narrow strip along the principal waterway.										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 177.47.



ALBUQUERQUE, NEW MEXICO WATERSHED 47.003



ALBUQUERQUE, NEW MEXICO WATERSHED 47.003

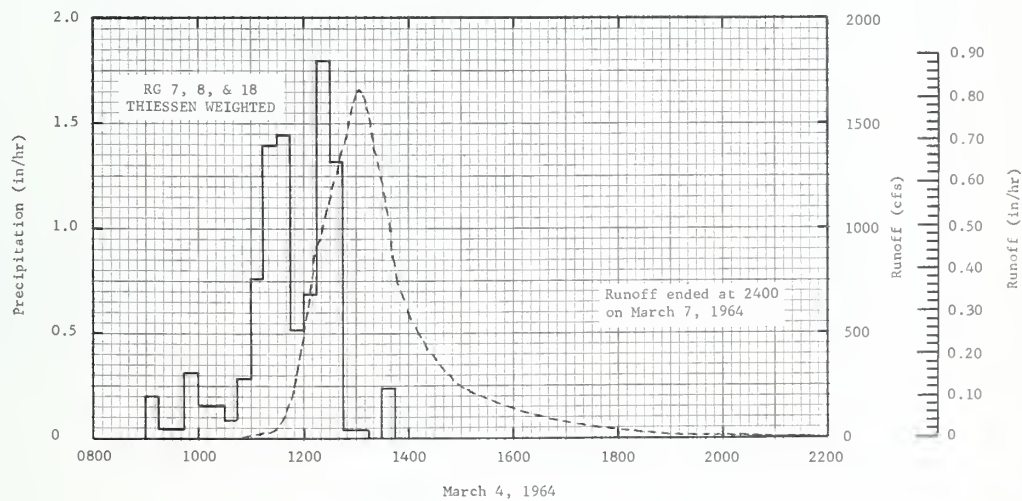
MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI								WATERSHEO W-4 ^{1/}		62.01								
						AREA—2,000 ACRES (3.13 SQ. MILES)																		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL											
1964 P ^{2/} Q	3.57 .15	3.09 .11	6.51 1.78	9.80 2.68	1.33 .00	1.20 .00	6.91 .55	5.47 .39	6.29 .75	2.30 .04	5.16 .34	8.11 2.45	59.74 9.24											
STA AV ^{3/} (57-64) Q	3.81 .71	4.68 .92	4.61 .65	5.06 .72	3.49 .23	3.48 .13	4.71 .20	3.31 .16	5.03 .39	2.28 .08	5.02 .51	4.95 .74	50.43 5.44											
MEAN 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21											
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																								
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																					
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS									
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME								
1964	3-4	.82	3-4	.70	3-4	1.13	3-4	1.56	3-4	1.62	12-3	1.64	12-2	1.79	4-22	1.98								
MAXIMUMS FOR PERIOD OF RECORD																								
1957 TO 1964	2-23 1962	.84	2-23 1962	.72	2-23 1962	1.13	3-4 1964	1.56	3-4 1964	1.62	1-31 1957	2.38	1-30 1957	3.34	1-27 1957	3.90								
NOTES: Watershed conditions: About 22% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 33% in pasture and idle land, good cover April to October with fair cover remainder of year; 43% in woods, good cover; 2% bare gullies. Percentages of total area in various land use categories as reported herein, are based on the latest survey completed in 1962. They differ significantly from those previously reported. Changes occurred over a period of 4 years prior to 1962. 1/ About 30% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 7, 8, and 18. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																								
1964 DAILY AIR TEMPERATURE (degrees F)						OXFORD, MISSISSIPPI								WATERSHED W-4		62.01								
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	29	17	50	36	50	22	65	38	74	46	62	55	77	68	91	71	91	66	74	54	72	36	29	16
2	41	22	58	25	55	43	75	47	80	52	75	50	87	69	92	71	89	60	82	55	75	45	46	18
3	62	31	60	26	61	45	75	59	68	53	79	51	89	66	92	73	88	55	82	61	74	44	58	40
4	63	33	59	33	69	46	78	57	79	56	78	50	88	67	96	76	90	59	75	61	75	44	62	41
5	52	19	58	34	71	39	67	57	79	55	81	59	91	67	101	74	90	60	67	46	75	56	44	32
6	54	19	53	38	54	32	68	60	82	60	86	57	90	67	92	68	90	61	61	31	76	43	34	29
7	51	24	58	36	65	37	80	60	81	62	84	64	80	69	92	70	90	68	63	33	74	43	38	18
8	52	24	41	21	65	50	81	43	82	66	88	68	96	72	92	71	89	68	68	34	58	51	46	18
9	57	41	48	22	77	63	51	29	82	67	90	70	95	69	90	67	88	60	74	44	65	37	57	35
10	45	21	53	35	73	36	58	32	72	62	90	73	88	69	89	67	90	58	61	30	72	38	56	34
11	47	22	51	24	50	31	71	34	79	61	95	75	89	72	92	71	91	60	62	31	74	41	59	44
12	43	26	45	24	66	33	75	45	80	51	95	69	80	66	90	68	87	60	69	37	72	53	59	50
13	35	17	49	32	62	34	67	53	79	51	95	71	84	60	77	52	80	51	73	43	72	41	60	48
14	25	8	45	22	73	42	67	40	67	52	92	72	77	53	81	56	75	41	74	45	75	41	49	23
15	36	9	49	22	78	43	74	41	73	45	91	74	84	61	80	63	82	43	67	55	73	48	54	24
16	43	12	51	34	61	31	75	46	80	50	91	70	88	67	74	62	88	49	57	49	81	61	54	30
17	39	16	47	28	68	33	81	56	83	53	83	69	87	64	74	63	84	65	76	43	79	60	63	39
18	51	17	53	27	68	35	76	58	85	56	91	72	90	67	83	60	71	65	82	43	71	60	57	13
19	57	27	48	34	66	41	81	64	88	60	92	75	91	71	83	61	85	62	80	47	65	50	25	12
20	69	42	43	27	56	44	79	65	90	63	92	74	91	72	87	64	89	62	61	30	65	28	34	20
21	58	30	40	27	71	37	82	63	88	60	94	70	94	71	88	68	88	64	61	30	48	25	39	29
22	68	32	37	17	41	27	79	59	90	63	96	68	92	71	88	73	87	68	77	40	34	13	45	32
23	65	46	38	16	56	28	75	59	90	67	97	73	91	67	82	69	88	67	75	40	42	14	60	44
24	70	51	50	20	70	38	71	61	84	66	92	70	92	70	86	61	84	53	68	35	53	17	71	58
25	66	31	55	29	73	55	72	57	85	60	88	57	94	61	87	64	77	43	71	36	48	38	75	43
26	53	31	56	36	70	28	76	61	89	62	88	57	94	71	87	64	79	45	74	37	58	31	68	38
27	66	37	45	27	46	28	73	63	91	68	91	66	92	71	83	65	84	61	71	43	68	39	41	29
28	57	25	43	29	63	30	80	61	93	71	92	64	92	71	89	69	82	52	79	48	71	55	35	29
29	36	15	51	21	58	30	77	51	82	47	96	66	92	74	90	69	59	52	70	47	60	30	54	34
30	51	15	---	---	58	21	68	42	73	52	78	67	89	69	92	69	67	57	78	47	59	18	64	46
31	59	24	---	---	45	22	---	---	70	55	---	---	87	70	92	68	---	---	68	35	---	---	70	48
AV.	52	25	49	28	62	36	73	52	81	58	88	66	89	68	88	67	84	58	71	42	66	40	52	33
MEAN	38.5	38.6	49.4	42.6	62.6	69.5	77.0	78.3	86.5	87.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6	90.6
STA AV	48	28	53	33	60	38	72	50	81	58	86	65	90	68	90	67	84	62	74	49	62	39	50	30
NOTES: TEMPERATURE DATA FROM U. S. WEATHER BUREAU STATION AT HOLLY SPRINGS 2N, MISS. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																								

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI							WATERSHED W- 4	62-01
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.28	.00	.26	.01	.00	.54	.00	.71	.00	.71
3	.00	.00	.00	.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.87
4	.00	.00	2.47	1.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
5	.08	.68	.00	.59	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.98	.04	.00	.07	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.14	.04	.00	.00	.00	.00	.00	.00	.64	.00	.00	.00
8	1.04	.00	.01	.00	.00	.00	.41	.26	.00	.00	.00	.00	.00	.00
9	.03	.00	.58	.00	.41	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.02	.00	.24	.00	.00	.00	.00	.00	.00	.00	.00	1.60
11	.55	.00	.00	.40	.00	.10	2.93	.50	.00	.00	.00	.73	.00	.73
12	.06	.00	.00	.69	.08	.22	1.00	.00	.00	.00	.12	.00	.00	.00
13	.00	.80	.00	.81	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00
14	.00	.02	.67	.00	.00	.01	.00	.00	.00	.23	.00	.00	.00	.00
15	.00	.87	.00	.00	.00	.00	.58	3.81	.00	.10	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.43	.00	.00	.00	.00	.00	.00	.00
17	.00	.18	.00	.00	.00	.00	.00	.00	.93	.00	1.14	.24	.00	.24
18	.00	.14	.00	.00	.00	.00	.00	.00	.00	.11	.69	.00	.00	.00
19	.18	.00	.14	.00	.00	.00	.01	.00	.00	.00	.85	.21	.00	.21
20	.00	.00	.01	.00	.00	.00	.00	.00	.29	.00	.00	.05	.00	.05
21	.00	.00	.00	.26	.00	.00	.18	.17	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	1.03	.00	.00	.00	.08	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	1.81	.00	.11	.00	.00	.00	.00	.00	.00	.00	.00
24	.12	.00	.75	.00	.00	.00	.19	.00	.00	.00	.30	.40	.00	.40
25	.00	.00	.24	.09	.00	.00	.00	.23	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	1.84	.00	.00	.10	.36	.00	.00	.00	.00	.00	.00
27	.00	.25	.00	.11	.00	.00	.00	.00	2.96	.00	1.25	.00	.00	.00
28	.00	.115	.49	.00	.00	.00	.00	.00	2.02	1.13	.17	.00	.00	.00
29	.00	.00	.00	.00	.00	.18	.55	.00	.09	.00	.00	.00	.00	.00
30	.00	-----	.00	.00	.00	.43	.00	.00	.00	.00	.00	.27	.00	.27
31	.53	.00	.00	-----	.32	-----	.27	.05	-----	.00	-----	.00	.00	.00
TOTAL	3.57	3.09	6.51	9.80	1.33	1.20	6.91	5.47	6.29	2.30	5.16	8.11	.00	.00
ST. AV.	3.81	4.68	4.61	5.06	3.49	3.48	4.71	3.31	5.03	2.28	5.02	4.95	.00	.00
NOTES: DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 7, 8, AND 18.														
1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W- 4	62-01
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	6.09	.00	.00	.00	.00	.00	.00	2.34	.00	.09	.00	.09
3	.00	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.00	.00	133.66
4	.00	.00	136.02	26.99	.00	.00	.00	.00	.00	.00	.00	.00	.00	16.59
5	.00	1.14	1.49	7.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.99
6	.61	.04	.27	1.87	.00	.00	.00	.00	.00	.00	.00	.25	.00	.25
7	.00	.00	.02	.08	.00	.00	.00	.00	.00	.00	.00	.06	.00	.06
8	8.54	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	1.26	.00	3.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.00	.75	.00	.75
11	.22	.00	.00	.00	.00	.00	29.94	.00	.00	.00	.00	.01	.00	.01
12	1.89	.00	.00	.29	.00	.00	16.16	.00	.00	.00	.00	.96	.00	.96
13	.00	.90	.00	21.24	.00	.00	.00	.00	.00	.00	.00	.53	.00	.53
14	.00	.00	.35	.54	.00	.00	.00	.00	.00	.00	.00	.23	.00	.23
15	.00	7.06	.03	.16	.00	.00	.29	29.67	.00	.00	.00	.07	.00	.07
16	.00	.06	.00	.00	.00	.00	.12	3.06	.00	.00	.00	.03	.00	.03
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	5.48	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.57	.00	.00	.00
19	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.69	.13	.00	.13
20	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.13	.06	.00	.06
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	6.64	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	82.08	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.07	2.63	.00	.00	.00	.00	.00	.00	.00	.37	.00	.37
25	.00	.00	.86	.24	.00	.00	.00	.00	.00	.00	.00	.05	.00	.05
26	.00	.00	.00	41.56	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	30.44	.00	.00	.00	.00	27.99	.00	3.44	.00	.00	.00
28	.00	.00	1.44	1.68	.00	.00	.00	.00	35.26	1.24	11.46	.00	.00	.00
29	.00	.00	.00	.33	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00
30	.00	-----	.00	.12	.00	.00	.00	.00	.00	.00	.00	.10	.00	.10
31	.05	.00	.00	-----	.00	-----	.00	-----	-----	.00	-----	.00	.00	.00
MEAN	.41	.32	4.83	7.50	.00	.00	1.50	1.06	2.11	.12	.96	6.63	.00	.00
INCHES	.15	.11	1.78	2.68	.00	.00	.55	.39	.75	.04	.34	2.45	.00	.00
NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.01190. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.														

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-4 62.01			
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of March 4-7, 1964 1/										
3-4	2/.10	.0000	3-4	3 RG	AVG 3/		3-4			
				0900	.00	.00		0912	.00	.0000
				0915	.20	.05		0930	.26	.0000
				0930	.04	.06		0948	.38	.0000
				0945	.04	.07		0956	1.36	.0001
								1050	3.77	.0012
				1000	.32	.15		1122	28.11	.0054
				1015	.16	.19		1140	124.75	.0168
				1030	.16	.23		1200	516.00	.0697
				1045	.08	.25		1212	911.00	.1405
				1100	.28	.32		1228	1096.04	.2732
				1115	.76	.51		1304	1662.56	.6835
				1130	1.40	.86		1332	1154.26	1.0094
				1145	1.44	1.22		1348	744.29	1.1350
				1200	.52	1.35		1412	495.97	1.2580
				1215	.68	1.52		1458	250.84	1.3999
				1230	1.80	1.97		1626	105.81	1.5296
				1245	1.32	2.30		1828	23.26	1.5946
				1300	.04	2.31		1958	10.47	1.6072
				1315	.04	2.32		2128	5.39	1.6131
				1330	.00	2.32		2400	3.31	1.6186
				1345	.24	2.38	3-5	0302	2.11	1.6226
								2400	.52	1.6363
							3-6	2400	.02	1.6396
							3-7	2400	.00	1.6398

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000496. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB 945, P. 62.1-4. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 7, 8, AND 18) PRIOR TO 0900 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON PREVIOUS PAGE. 3/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED W-51/ AREA=1,130 ACRES (1.76 SQ. MILES)								62.02					
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL						
1964 P- Q	3.50 .85	3.07 .56	7.23 3.09	9.49 5.24	1.64 .01	1.32 .00	6.60 .83	6.12 1.06	6.44 1.07	2.34 .07	5.23 .72	9.02 4.64	62.00 18.14						
STA AV3/P (57-64) Q	3.86 1.46	4.58 1.52	4.68 1.44	5.12 1.55	3.63 .49	3.58 .41	4.54 .27	3.74 .36	4.70 .49	2.25 .16	5.01 .90	5.07 1.60	50.76 10.65						
MEAN P- 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21						
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																			
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS				
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME			
1964	3-4	1.19	3-4	.99	3-4	1.63	3-4	2.12	3-4	2.20	12-3	2.97	12-2	3.22	12-3	3.86			
MAXIMUMS FOR PERIOD OF RECORD																			
1957 TO 1964	3-4 1964	1.19	3-4 1964	.99	3-4 1964	1.63	3-4 1964	2.12	11-13 1957	2.26	12-3 1964	2.97	1-30 1957	3.72	1-27 1957	5.25			
NOTES: Watershed conditions: About 16% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 62% in pasture and idle land, good cover April to October with fair cover remainder of year; 21% in woods, good cover; 1% bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1962. They differ significantly from those previously reported. Changes occurred over a period of 4 years prior to 1962. 1/ About 33% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 8 and 33. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																			
MONTHLY PRECIPITATION AND RUNOFF (inches): (Revised) Changed values <u>underlined</u> .																			
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL						
1961 P O	.73 .02	8.68 3.24	8.50 3.59	<u>3.65</u> .73	<u>3.48</u> .06	1.20 .00	3.89 .06	5.13 .50	1.64 .12	.67 .00	8.73 1.42	8.74 3.31	<u>55.04</u> 13.05						
1964 DAILY PRECIPITATION (inches)														OXFORD, MISSISSIPPI			WATERSHED W- 5		62.02
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC							
1	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00	.00	.00						
2	.00	.00	1.03	.00	.38	.00	.47	.07	.00	.51	.00	.00	.80						
3	.00	.00	.00	.83	.00	.00	.00	.00	.00	.00	.00	.00	4.17						
4	.00	.00	3.13	1.10	.00	.00	.00	.00	.00	.00	.00	.00	.03						
5	.09	.60	.00	.53	.00	.00	.00	.00	.00	.00	.00	.00	.00						
6	.97	.05	.00	.05	.00	.08	.00	.00	.00	.00	.00	.00	.00						
7	.00	.00	.15	.04	.00	.00	.00	.00	.00	.00	.66	.00	.00						
8	1.09	.00	.03	.00	.00	.00	.33	.19	.00	.00	.00	.00	.00						
9	.03	.00	.61	.00	.59	.00	.00	.00	.00	.00	.00	.00	.00						
10	.00	.00	.02	.00	.28	.00	.00	.00	.00	.00	.00	.00	1.83						
11	.51	.00	.00	.42	.00	.09	3.06	.52	.00	.00	.00	.00	.85						
12	.07	.00	.00	.58	.12	.33	.58	.00	.00	.00	.11	.00	.00						
13	.00	.81	.00	.74	.00	.00	.00	.00	.00	.20	.00	.00	.00						
14	.00	.04	.71	.00	.00	.03	.00	.00	.00	.17	.00	.00	.00						
15	.00	.89	.00	.00	.00	.00	.42	4.38	.00	.11	.00	.00	.00						
16	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00	.00						
17	.00	.18	.00	.00	.00	.00	.00	.00	.87	.00	1.12	.31	.00						
18	.00	.16	.00	.00	.00	.00	.00	.00	.00	.13	.60	.00	.00						
19	.17	.00	.15	.00	.00	.00	.01	.00	.00	.00	.86	.15	.00						
20	.00	.00	.00	.00	.00	.00	.06	.00	.11	.00	.00	.08	.00						
21	.00	.00	.00	.31	.00	.00	.39	.12	.00	.00	.00	.00	.00						
22	.00	.00	.00	1.00	.00	.00	.00	.06	.00	.00	.00	.00	.00						
23	.00	.00	.00	1.86	.00	.34	.00	.00	.00	.00	.00	.00	.00						
24	.11	.00	.67	.00	.00	.00	.21	.00	.00	.00	.34	.36	.00						
25	.00	.00	.24	.08	.00	.00	.00	.46	.00	.00	.00	.00	.00						
26	.00	.00	.00	1.84	.00	.00	.00	.27	.00	.00	.00	.00	.00						
27	.00	.19	.00	.11	.01	.00	.00	.00	3.13	.00	1.35	.00	.00						
28	.00	.155	.49	.00	.00	.00	.00	.00	2.24	1.22	.19	.00	.00						
29	.00	.00	.00	.00	.00	.20	.75	.00	.09	.00	.00	.00	.00						
30	.00		.00	.00	.00	.25	.00	.00	.00	.00	.00	.44	.00						
31	.46		.00		.26		.05	.05		.00		.00	.00						
TOTAL	3.50	3.07	7.23	9.49	1.64	1.32	6.60	6.12	6.44	2.34	5.23	9.02							
STA AV	3.86	4.58	4.68	5.12	3.63	3.58	4.54	3.74	4.70	2.25	5.01	5.07							
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 8 AND 33. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																			

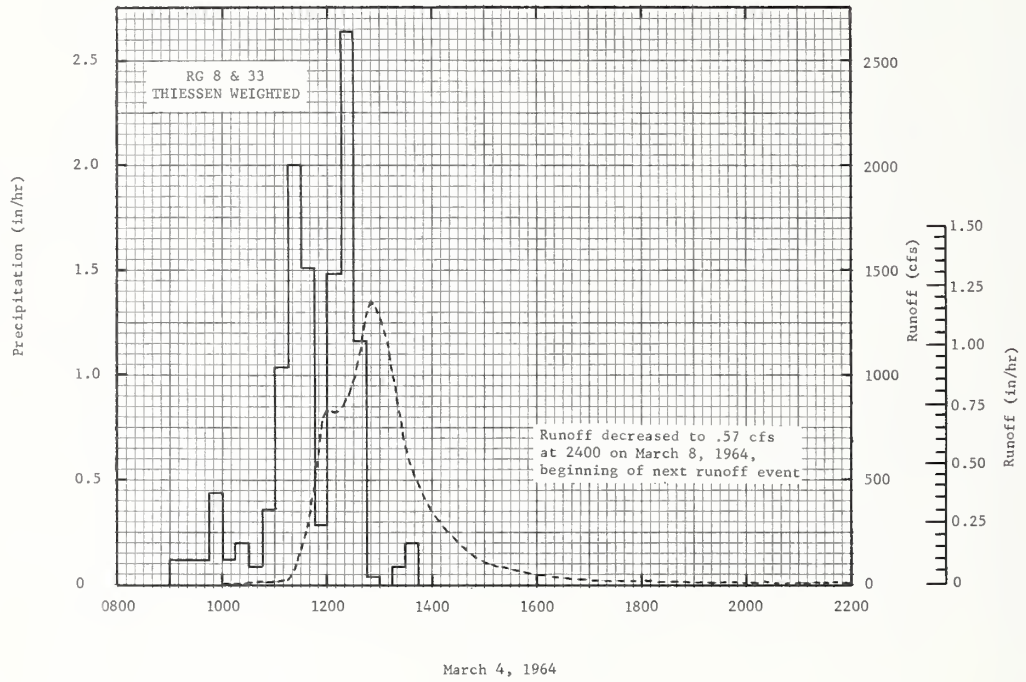
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W- 5		62.02
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.00	.33	.00	.00	.00	.00	.00	.00	.00	.00	
2	.00	.00	14.13	.00	.00	.00	.00	.00	.00	2.61	.00	.01	.01	
3	.00	.00	1.04	.09	.00	.00	.00	.00	.00	.12	.00	139.20	.20	
4	.00	.00	106.09	38.22	.00	.00	.00	.00	.00	.00	.00	13.88	.88	
5	.00	1.79	7.57	9.90	.00	.00	.00	.00	.00	.00	.00	.00	.87	
6	5.44	.39	1.48	3.78	.00	.00	.00	.00	.00	.00	.00	.00	.20	
7	1.69	.01	.69	1.50	.00	.00	.00	.00	.00	.00	.00	.00	.16	
8	21.73	.00	.61	1.15	.00	.00	.00	.00	.00	.00	.00	.00	.08	
9	3.33	.00	5.18	.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	
10	.78	.00	1.76	.95	.00	.00	.00	.00	.00	.00	.00	.00	16.08	
11	1.21	.00	.62	1.39	.00	.00	28.85	.00	.00	.00	.00	.00	48.25	
12	6.21	.00	.49	8.61	.00	.00	10.63	.00	.00	.00	.00	.00	.39	
13	.00	4.84	.43	25.98	.00	.00	.00	.00	.00	.00	.00	.00	.06	
14	.00	.39	2.21	.82	.00	.00	.00	.00	.00	.00	.00	.00	.00	
15	.00	17.67	1.10	.23	.00	.00	.09	46.19	.00	.00	.00	.00	.00	
16	.00	.65	.06	.14	.00	.00	.00	4.28	.00	.00	.00	.00	.00	
17	.00	.39	.02	.09	.00	.00	.00	.00	.00	.00	.00	1.87	.00	
18	.00	.35	.00	.02	.00	.00	.00	.00	.00	.00	.00	.80	.00	
19	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.41	.00	
20	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.44	.00	
21	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	
22	.00	.00	.00	12.95	.00	.00	.00	.00	.00	.00	.00	.00	.00	
23	.00	.00	.00	60.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	
24	.00	.00	.14	4.21	.00	.00	.00	.00	.00	.00	.00	.00	.16	
25	.00	.00	1.00	1.28	.00	.00	.00	.00	.00	.00	.00	.00	.15	
26	.00	.00	.06	52.22	.00	.00	.00	.11	.00	.00	.00	.00	.00	
27	.00	.00	.00	21.68	.00	.00	.00	.00	21.76	.00	.00	6.95	.00	
28	.00	.00	2.00	1.20	.00	.00	.00	.00	28.73	.46	14.60	.00	.00	
29	.00	.00	.17	.79	.00	.00	.02	.00	.28	.00	.12	.00	.00	
30	.00	-----	.02	.74	.00	.00	.00	.00	.00	.00	.00	.57	.57	
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.18	.18	
MEAN	1.30	.92	4.73	8.29	.01	.00	1.28	1.63	1.69	.10	1.14	7.10	7.10	
INCHES	.85	.56	3.09	5.24	.01	.00	.83	1.06	1.07	.07	.72	4.64	4.64	

NOTES: TO CONVERT DISCHARGE IN GFS TO IN/DAY, MULTIPLY BY 0.02106. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

1964			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-5				62.02	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of March 4-6, 1964 1/																
3-4	2/ .12	3/.0085	3-4	2 RG	AVG 4/		3-4	1002	1.20	.0000						
				0900	.00	.00		1116	23.33	.0091						
				0915	.12	.03		1138	279.00	.0577						
				0930	.12	.06		1158	833.28	.2204						
				0945	.12	.09		1212	829.37	.3906						
				1000	.44	.20		1228	950.00	.5988						
				1015	.12	.23		1250	1355.00	.9697						
				1030	.20	.28		1308	1175.00	1.3028						
				1045	.08	.30		1326	722.00	1.5525						
				1100	.36	.39		1414	269.00	1.9004						
				1115	1.04	.65		1502	103.20	2.0310						
				1130	2.00	1.15		1600	44.91	2.0938						
				1145	1.52	1.53		1714	20.73	2.1293						
				1200	.28	1.60		1848	12.86	2.1524						
				1215	1.48	1.97		2102	10.51	2.1753						
				1230	2.64	2.63		2400	28.29	2.2258						
				1245	1.16	2.92		0200	44.00	2.2893						
				1300	.04	2.93		0300	18.93	2.3169						
				1315	.00	2.93		0432	7.49	2.3347						
				1330	.08	2.95		0602	5.09	2.3429						
				1345	.20	3.00		1036	2.41	2.3580						
								2400	2.21	2.3852						
							3-6	2400	5/ .73	2.4163						
Watershed conditions: 16% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 28% in pasture and 34% idle, fair to good cover; 21% in woods, good cover; 1% in bare gullies.																

NOTES: TO CONVERT RUNOFF IN GFS TO IN/HR, MULTIPLY BY 0.000878. FOR MAP OF WATERSHED, SEE SELECTED RUNOFF EVENTS FOR SMALL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, ARS, SWG, JANUARY 1960, P. 62.2-3. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 8 AND 33) PRIOR TO 0900 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 1002 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3. 5/ RUNOFF DECREASED TO .57 GFS AT 2400 ON 3-8-64, BEGINNING OF NEXT RUNOFF EVENT.

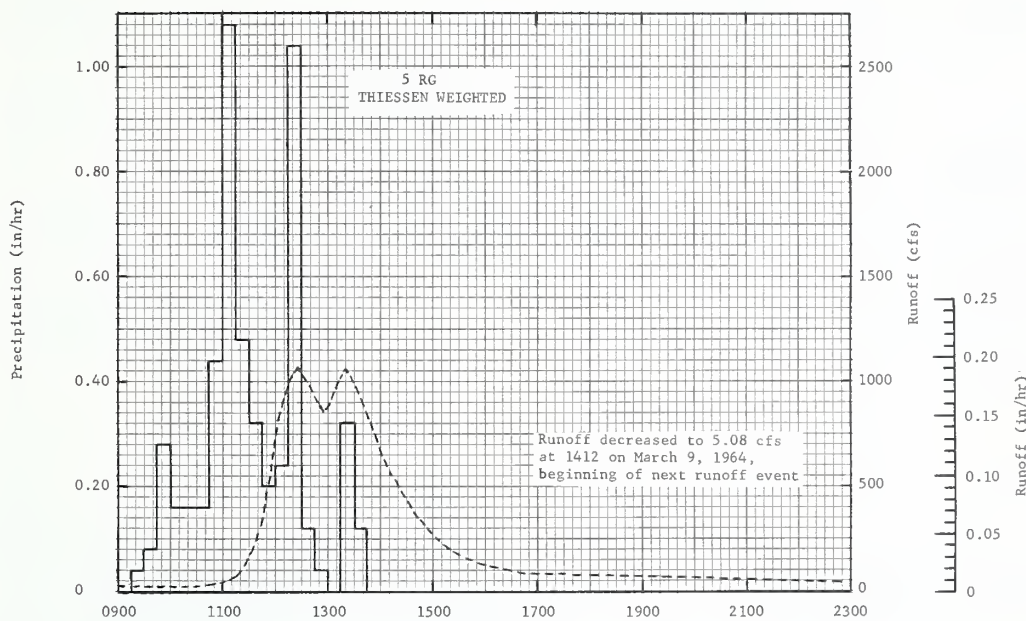


OXFORD, MISSISSIPPI WATERSHED W-5

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI AREA—5,530 ACRES (8.64 SQ. MILES)								WATERSHED W-10 ¹ / 62.03		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ² / _Q	4.04 .49	3.26 .21	6.28 1.67	9.24 3.49	2.26 .03	1.85 .08	5.95 .72	5.99 .67	6.13 1.17	2.05 .04	5.50 .58	8.54 4.59	61.09 13.74			
STA AV ³ / _P (57-64) Q	3.99 1.08	4.78 1.30	4.65 1.10	5.25 1.27	4.01 .64	3.73 .25	4.66 .33	3.55 .33	4.77 .60	2.20 .14	5.09 .72	5.19 1.39	51.87 9.15			
MEAN P ⁴ / _{45 YR}	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	4-23	.52	4-23	.45	4-23	.71	12-3	1.43	12-3	1.78	12-3	2.66	12-3	2.88	12-3	3.36
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1964	2-23 1962	1.12	2-23 1962	1.00	2-23 1962	1.61	2-23 1962	2.13	2-23 1962	2.39	12-3 1964	2.66	1-30 1957	2.98	1-27 1957	4.08
NOTES: Watershed conditions: About 23% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 35% in pasture and idle land, good cover April to October with fair cover remainder of year; 40% in woods, good cover; 2% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1964. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1964. 1/ About 20% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 13, 14, 20, 24, and 26. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
MONTHLY PRECIPITATION AND RUNOFF (inches): (Revised) Changed values <u>underlined</u> .																
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1960 P	4.70	3.47	5.70	2.54	3.33	2.72	1.83	3.75	2.66	4.43	2.56	4.20	41.89			
Q	.67	.73	2.37	.14	.38	.02	.04	<u>.16</u>	.00	.28	.01	.07	<u>4.87</u>			
1961 P	.72	8.73	8.45	3.27	2.97	2.19	4.25	4.18	1.22	.83	8.52	9.25	54.58			
Q	.00	2.53	2.78	.58	.13	.19	.16	.69	.06	.00	.67	<u>2.73</u>	<u>10.52</u>			
1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI WATERSHED W-10 62.03										
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00			
2	.00	.00	1.03	.00	.41	.00	1.12	.01	.00	.35	.00	.70				
3	.00	.00	.00	.63	.00	.00	.00	.00	.00	.00	.00	.00	4.34			
4	.00	.00	1.65	1.16	.00	.00	.00	.00	.00	.00	.00	.00	.01			
5	.08	.64	.00	.60	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	1.03	.08	.00	.00	.00	.24	.00	.00	.00	.00	.00	.00	.00			
7	.00	.00	.26	.02	.00	.00	.00	.00	.00	.00	.72	.00	.00			
8	1.17	.00	.02	.00	.00	.00	.06	.26	.04	.00	.00	.00	.00			
9	.04	.00	.70	.00	.57	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.27	.00	.00	.31	.00	.00	.00	.00	1.58			
11	.63	.00	.00	.45	.01	.21	2.47	.51	.00	.00	.00	.00	.81			
12	.07	.03	.00	.63	.63	.77	.52	.00	.00	.00	.14	.00	.00			
13	.00	.91	.00	.61	.00	.00	.00	.00	.00	.04	.00	.00	.00			
14	.00	.04	.80	.00	.00	.01	.00	.00	.00	.15	.00	.00	.00			
15	.00	.88	.00	.00	.00	.00	.14	3.79	.00	.15	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.05	.04	.00	.00	.00	.00	.00			
17	.00	.16	.00	.00	.00	.00	.00	.00	.70	.00	.96	.29	.00			
18	.00	.17	.00	.00	.00	.00	.00	.00	.00	.13	.64	.00	.00			
19	.25	.00	.16	.00	.00	.00	.02	.00	.00	.00	.97	.16	.00			
20	.00	.00	.07	.00	.00	.00	.02	.00	.00	.00	.00	.05	.00			
21	.00	.00	.00	.37	.00	.00	.24	.40	.00	.00	.00	.00	.00			
22	.00	.00	.00	.99	.00	.00	.00	.21	.00	.00	.00	.00	.00			
23	.00	.00	.00	1.93	.00	.12	.00	.00	.00	.00	.00	.00	.00			
24	.20	.00	.78	.00	.00	.00	.05	.00	.00	.00	.29	.34	.00			
25	.00	.00	.18	.12	.00	.00	.00	.30	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.69	.00	.00	.00	.16	.00	.00	.00	.00	.00			
27	.00	.18	.00	.04	.02	.00	.00	.00	3.06	.00	1.62	.00	.00			
28	.00	.165	.61	.00	.00	.00	.00	.00	2.31	1.23	.16	.00	.00			
29	.00	.01	.00	.00	.00	.25	1.06	.00	.06	.00	.00	.00	.00			
30	.00	-----	.00	.00	.02	.25	.08	.00	.00	.00	.00	.26	.00			
31	.57	-----	.00	-----	.33	-----	.00	.00	-----	.00	-----	.00	.00			
TOTAL	4.04	3.26	6.28	9.24	2.26	1.85	5.95	5.99	6.13	2.05	5.50	8.54				
STA AV	3.99	4.78	4.65	5.25	4.01	3.73	4.66	3.55	4.77	2.20	5.09	5.19				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 13, 14, 20, 24, AND 26. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)					OXFORD, MISSISSIPPI				WATERSHED W-10			62.03
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.85	.04	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	38.75	.56	.07	.00	39.50	.00	.00	.63	.00	.00
3	.00	.00	9.68	.63	.00	.00	.04	.00	.00	.00	.00	596.46
4	.00	.00	155.76	97.95	.00	.00	.00	.00	.00	.00	.00	71.86
5	.00	.38	10.41	35.95	.00	.00	.00	.00	.00	.00	.00	6.72
6	14.21	.00	6.08	11.35	.00	.00	.00	.00	.00	.00	.00	2.76
7	8.18	.00	5.81	4.45	.00	.00	.00	.00	.00	.00	.05	1.10
8	55.02	.00	5.57	2.92	.00	.00	.00	.00	.00	.00	.00	.79
9	11.85	.00	39.19	1.81	.01	.00	.00	.00	.00	.00	.00	.51
10	2.02	.00	20.89	1.39	.00	.00	.00	.00	.00	.00	.00	30.52
11	4.49	.00	5.41	1.39	.00	.00	65.29	1.07	.00	.00	.00	244.15
12	14.64	.00	3.51	10.74	7.72	17.26	52.13	.00	.00	.00	.00	26.23
13	.66	2.09	2.40	70.87	.05	.38	.00	.00	.00	.00	.00	24.43
14	.42	.14	11.95	14.04	.00	.00	.00	.00	.00	.00	.00	24.43
15	.39	40.16	10.48	3.67	.00	.00	.00	141.62	.00	.00	.00	12.74
16	.34	1.64	3.01	2.46	.00	.00	.00	12.60	.00	.00	.00	1.46
17	.31	.97	1.48	1.80	.00	.00	.00	.01	.00	.00	18.57	1.23
18	.29	1.39	1.16	1.29	.00	.00	.00	.00	.00	.00	4.71	.77
19	.59	1.10	1.10	.78	.00	.00	.00	.00	.00	.00	21.13	1.00
20	.51	.46	1.10	.56	.00	.00	.00	.00	.00	.00	.49	1.15
21	.10	.18	.92	.31	.00	.00	.00	.00	.00	.00	.00	.56
22	.07	.05	.59	42.90	.00	.00	.00	.00	.00	.00	.00	.39
23	.02	.01	.45	267.30	.00	.00	.00	.00	.00	.00	.00	.29
24	.00	.00	2.58	24.23	.00	.00	.00	.00	.00	.00	.00	4.71
25	.00	.00	15.11	8.68	.00	.00	.00	.00	.00	.00	.00	.53
26	.00	.00	3.72	153.62	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.01	2.21	40.63	.00	.00	.00	.00	98.59	.00	38.53	.00
28	.00	.09	21.44	5.79	.00	.00	.00	.00	172.32	8.27	50.14	.00
29	.00	.00	5.37	.89	.00	.00	9.81	.00	.90	.00	.58	.00
30	.00	-----	1.85	.11	.00	.00	.08	.00	.00	.00	.06	8.61
31	.20	-----	1.24	-----	.00	-----	.00	.00	-----	.00	-----	3.40
MEAN	3.68	1.68	12.55	26.99	.25	.59	5.38	5.01	9.06	.29	4.47	34.41
INCHES	.49	.21	1.67	3.49	.03	.08	.72	.67	1.17	.04	.58	4.59
NOTES: TO CONVERT DISCHARGE IN GFS TO IN/DAY, MULTIPLY BY 0.0043041. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.												
1964 SELECTED RUNOFF EVENT					OXFORD, MISSISSIPPI				WATERSHED W-10			62.03
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Event of March 4-6, 1964 1/												
3-4	2/.33	3/.0654	3-4	5 RG	AVG4/		3-4	0900	28.58	.0000		
				0915	.00	.00		1030	25.00	.0072		
				0930	.04	.01		1058	44.08	.0101		
				0945	.08	.03		1116	72.00	.0132		
				1000	.28	.10		1130	175.24	.0184		
				1015	.16	.14		1204	820.00	.0690		
				1030	.16	.18		1226	1070.48	.1311		
				1045	.16	.22		1254	854.63	.2117		
				1100	.44	.33		1320	1055.73	.2859		
				1115	1.08	.60		1400	656.13	.3882		
				1130	.48	.72		1520	193.00	.4898		
				1145	.32	.80		1640	83.76	.5229		
				1200	.20	.85		1918	73.91	.5601		
				1215	.24	.91		2400	32.44	.6049		
				1230	1.04	1.17	3-5	0430	15.00	.6240		
				1245	.12	1.20		1010	6.06	.6347		
				1300	.04	1.21		1218	5.55	.6370		
				1315	.00	1.21		2400	6.61	.6497		
				1330	.32	1.29	3-6	2400	5/ 5.55	.6759		
				1345	.12	1.32						
Watershed conditions: 23% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 11% in pasture and 24% idle, fair to good cover; 40% in woods, good cover; 2% in bare gullies.												
NOTES: TO CONVERT RUNOFF IN GFS TO IN/HR, MULTIPLY BY 0.0001793. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.3-3. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIENEN WEIGHTED RAINFALL (RAIN GAGES 13, 14, 20, 24 AND 26) PRIOR TO 0915 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0900 ON 3-4-64. 4/ THIENEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3. 5/ RUNOFF DECREASED TO 5.08 GFS AT 2400 ON 3-8-64 AND CONTINUED AT THIS RATE UNTIL 1412 ON 3-9-64, BEGINNING OF NEXT RUNOFF EVENT.												



March 4, 1964

OXFORD, MISSISSIPPI WATERSHED W-10

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI								WATERSHED W-12 1/2		62.04
						AREA— 22,800 ACRES (35.6 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ² / _Q	3.63 .25	3.10 .21	6.32 1.32	9.82 2.51	1.62 .06	1.45 .03	6.47 .44	5.53 .46	6.07 .76	2.18 .02	5.12 .36	8.35 2.54	59.66 8.96			
STA AV ³ / _P (57-64) Q	3.88 .76	4.63 .95	4.55 .77	5.05 .80	3.63 .36	3.73 .23	4.58 .20	3.50 .16	4.60 .31	2.22 .07	4.96 .42	4.95 .86	50.28 5.89			
MEAN P ⁴ / ₄₅ YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-4	.24	3-4	.23	3-4	.44	3-4	.82	12-3	1.10	12-3	1.60	12-3	1.77	12-3	2.02
MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO 19 64	2-23 1962	.35	2-23 1962	.35	2-23 1962	.68	2-23 1962	1.38	2-23 1962	1.62	2-23 1962	1.84	1-30 1957	2.28	1-27 1957	3.07
NOTES: Watershed conditions: About 18% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 44% in pasture and idle land, good cover April to October with fair cover remainder of year; 33% in woods, good cover; 1% in bare gullies; 4% urban. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1963. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1963. 1/ About 23% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 16 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI								WATERSHED W-12		62.04
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00	.00	.00			
2	.00	.00	.95	.00	.29	.00	.51	.02	.00	.30	.00	.00	.52			
3	.00	.00	.00	.87	.00	.00	.00	.00	.00	.00	.00	.00	4.24			
4	.00	.00	2.24	1.23	.00	.00	.00	.00	.00	.00	.00	.00	.03			
5	.08	.66	.00	.56	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	.98	.06	.00	.02	.00	.24	.02	.00	.00	.00	.00	.00	.00			
7	.00	.00	.13	.02	.00	.00	.00	.00	.00	.00	.00	.73	.00			
8	1.10	.00	.02	.00	.00	.00	.20	.22	.00	.00	.00	.00	.00			
9	.03	.00	.66	.00	.34	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.31	.00	.00	.03	.00	.00	.00	.00	1.59			
11	.51	.00	.00	.40	.01	.12	2.56	.65	.00	.00	.00	.00	.74			
12	.07	.01	.00	.59	.35	.48	1.25	.00	.00	.00	.12	.00	.00			
13	.00	.82	.00	.83	.00	.00	.00	.00	.00	.19	.00	.00	.00			
14	.00	.02	.61	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00			
15	.00	.88	.00	.00	.00	.00	.34	3.67	.00	.12	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.23	.01	.00	.00	.00	.00	.00			
17	.00	.18	.00	.00	.00	.00	.00	.00	.78	.00	.99	.25	.00			
18	.00	.14	.00	.00	.00	.00	.00	.00	.00	.12	.67	.00	.00			
19	.22	.00	.14	.00	.00	.00	.02	.00	.00	.00	.87	.19	.00			
20	.00	.00	.08	.00	.00	.00	.04	.00	.20	.00	.00	.04	.00			
21	.00	.00	.00	.30	.00	.00	.18	.16	.00	.00	.00	.00	.00			
22	.00	.00	.00	.99	.00	.00	.00	.11	.00	.00	.00	.00	.00			
23	.00	.00	.00	2.01	.00	.15	.00	.00	.00	.00	.00	.00	.00			
24	.15	.00	.74	.03	.00	.00	.17	.00	.00	.00	.30	.48	.00			
25	.00	.00	.19	.10	.00	.00	.00	.37	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.79	.00	.00	.01	.27	.00	.00	.00	.00	.00			
27	.00	.18	.00	.08	.01	.02	.00	.00	2.92	.00	1.28	.00	.00			
28	.00	.155	.52	.00	.00	.00	.00	.00	2.09	1.18	.16	.00	.00			
29	.00	.00	.00	.00	.00	.19	.62	.00	.08	.00	.00	.00	.00			
30	.00		.02	.00	.00	.25	.05	.00	.00	.00	.00	.27	.00			
31	.49				.31		.14	.02		.00			.00			
TOTAL	3.63	3.10	6.32	9.82	1.62	1.45	6.47	5.53	6.07	2.18	5.12	8.35				
STA AV	3.88	4.63	4.55	5.05	3.63	3.73	4.58	3.50	4.60	2.22	4.96	4.95				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIENEN WEIGHTED FROM RAIN GAGES 4-9, 13, 15, 18, 19, 20, 25, 29, 30, 31, AND 33. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-12 62.04	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.13	1.00	.71	2.02	3.56	.93	.82	.08	.38	.87	.32	3.43		
2	.76	.71	99.36	1.78	3.21	1.00	1.03	.07	.38	10.13	.19	3.68		
3	.75	.38	11.44	2.02	2.98	1.00	.60	.11	.38	2.71	.22	1402.99		
4	.18	.38	866.46	345.18	3.09	.87	.51	.16	.38	.22	.25	295.38		
5	.36	3.71	29.63	93.21	2.61	.93	.51	.16	.38	.20	.25	18.67		
6	10.64	2.40	8.63	40.75	2.02	.93	.60	.16	.38	.25	.31	8.60		
7	3.33	.67	8.20	10.18	1.94	.93	.71	.16	.38	.35	.31	6.18		
8	119.62	.42	7.81	6.93	1.78	1.00	.76	.14	.38	.35	.31	4.93		
9	46.66	.42	66.10	5.35	1.95	1.06	.88	.16	.38	.28	.28	3.93		
10	4.49	.56	25.68	4.24	2.43	1.12	.73	.20	.38	.22	.22	35.68		
11	3.28	.76	10.55	4.09	1.49	1.06	174.35	.43	.38	.22	.15	563.44		
12	22.45	1.00	8.86	15.79	8.13	1.39	238.33	.14	.38	.28	.15	19.26		
13	3.12	18.23	8.20	294.58	1.34	.61	1.72	.16	.38	.31	.20	7.61		
14	2.66	7.12	18.21	20.05	1.00	.76	.63	.18	.38	.31	.25	6.54		
15	2.76	138.01	13.82	6.62	1.00	.76	.55	326.95	.38	.35	.31	5.51		
16	2.76	9.38	3.90	4.12	1.06	.82	.69	101.00	.38	.47	.35	5.19		
17	2.31	2.11	2.31	3.32	1.13	.82	.58	1.66	.38	.47	11.65	4.62		
18	1.78	2.29	1.86	3.10	1.19	.71	.06	1.06	.38	.35	8.83	4.33		
19	1.95	1.98	2.12	2.76	1.12	.71	.04	.93	.38	.31	69.45	4.33		
20	1.73	1.03	2.12	3.22	1.19	.76	.08	.76	.38	.39	8.50	4.19		
21	1.07	.65	1.63	3.36	1.01	.76	.11	.76	.38	.36	4.39	3.58		
22	.93	.56	1.14	106.26	.94	.82	.10	.82	.38	.28	3.43	2.87		
23	.93	.61	.93	709.06	1.12	.71	.11	.76	.38	.39	3.68	1.76		
24	.93	.66	2.15	44.59	1.06	.60	.11	.66	.38	.42	4.96	9.84		
25	.93	.66	22.51	12.48	.88	.65	.09	.75	.38	.38	4.72	2.76		
26	.87	.82	3.96	406.17	.76	.76	.08	1.60	.42	.32	3.95	.75		
27	.87	.93	2.13	222.54	.82	.76	.11	.43	166.90	.19	29.13	.38		
28	.87	.88	22.93	16.76	.82	.60	.11	.25	536.50	1.40	183.78	.52		
29	.71	.82	6.36	7.43	1.01	.66	.72	.25	6.87	.28	3.43	.48		
30	.71	-----	2.88	4.51	1.13	.71	.26	.23	3.32	.31	3.43	3.03		
31	1.00	-----	2.29	-----	1.00	-----	.09	.27	-----	.35	-----	1.30		
MEAN	7.79	6.86	40.80	80.08	1.76	.84	13.74	14.24	24.12	.76	11.58	78.57		
INCHES	.25	.21	1.32	2.51	.06	.03	.44	.46	.76	.02	.36	2.54		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0010439. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

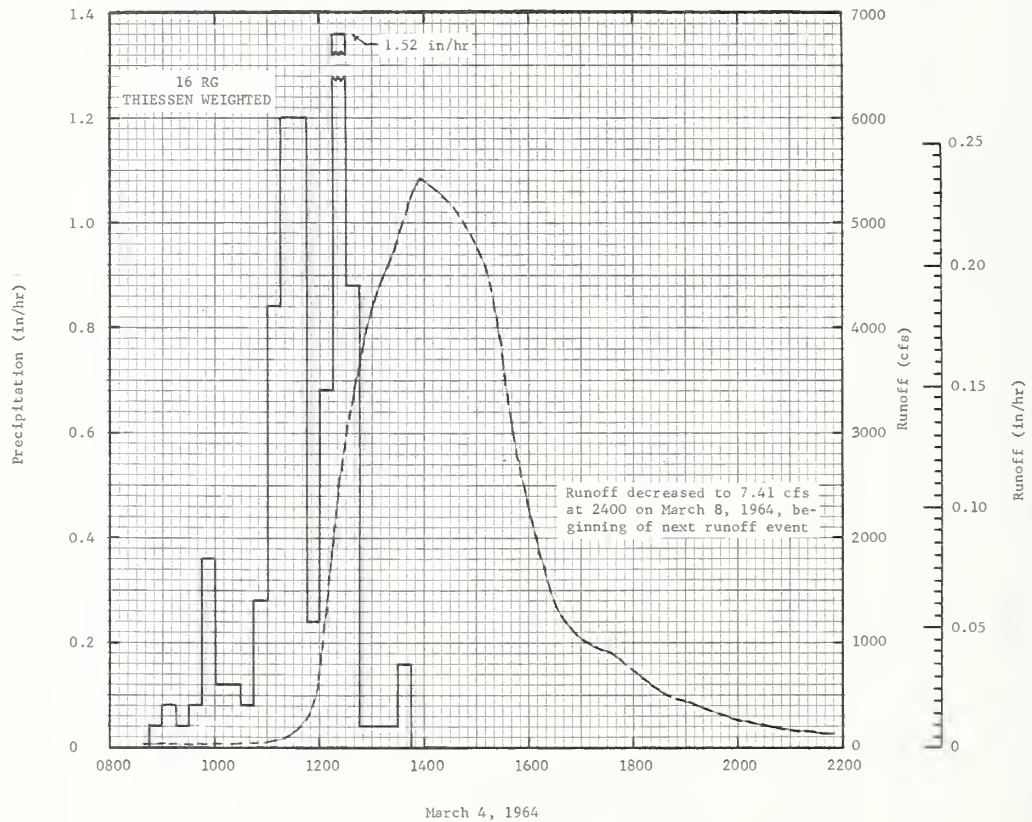
1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-12 62.04			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of March 4-8, 1964 1/										
3-4	2/.23	3/.0099	3-4	16 RG	AVG 4/		3-4			
				0845	.00	.00		0838	39.25	.0000
				0900	.04	.01		1010	38.18	.0026
				0915	.08	.03		1042	40.33	.0035
				0930	.04	.04		1116	83.25	.0051
								1138	193.37	.0073
				0945	.08	.06		1156	610.00	.0125
				1000	.36	.15		1218	1884.00	.0324
				1015	.12	.18		1240	3432.68	.0748
				1030	.12	.21		1258	4117.00	.1241
				1045	.08	.23		1316	4567.00	.1807
				1100	.28	.30		1342	5170.00	.2725
				1115	.84	.51		1356	5413.00	.3262
				1130	1.20	.81		1416	5296.00	.4038
				1145	1.20	1.11		1446	4963.00	.5154
				1200	.24	1.17		1512	4549.00	.6050
				1215	.68	1.34		1526	3919.00	.6480
				1230	1.52	1.72		1550	2674.00	.7053
				1245	.88	1.94		1616	1730.00	.7468
				1300	.04	1.95		1638	1258.00	.7707
				1315	.04	1.96		1714	970.00	.7997
				1330	.04	1.97		1732	928.00	.8121
				1345	.16	2.01		1826	580.00	.8416
								1842	480.00	.8478
								1858	457.18	.8532
								1916	390.00	.8588
Continued on next page										

Continued on next page

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000435. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.4-6. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 4-9, 13, 15, 18-20, 25, 29-31 AND 33) PRIOR TO 0845 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0838 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3.

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-12			62.04
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Watershed conditions: 18% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 16% in pasture and 28% idle with fair to good cover; 33% in woods, good cover; 1% in bare gullies; 4% urban.			Event of March 4-8, 1964 - Continued							
			3-5					1938	321.63	.8644
								2020	220.43	.8727
								2148	134.16	.8840
								2400	86.64	.8946
								0242	53.11	.9028
			3-6					0712	29.83	.9109
								1156	26.82	.9167
								1738	16.00	.9220
			3-7					2400	9.05	.9255
					2400	8.19	.9345			
							3-7	2400	8.19	.9431
							3-8	2400	<u>1</u> / 7.41	.9512
NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000435. <u>1</u> / BEGINNING OF NEXT RUNOFF EVENT.										

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000435. 1/ BEGINNING OF NEXT RUNOFF EVENT.



OXFORD, MISSISSIPPI WATERSHED W-12

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI AREA—32,100 ACRES (50.2 SQ. MILES)										WATERSHED W-17 1/2 62.05	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	P2/-	3.73	3.10	6.07	9.87	1.91	1.42	6.26	5.53	5.96	2.06	5.18	8.48	59.57			
	Q	.51	.54	1.70	3.44	.32	.20	.76	.84	.94	.26	.62	3.49	13.62			
STA AV3/P (57-64)	P	3.95	4.66	4.51	5.11	3.65	3.77	4.61	3.66	4.43	2.22	4.93	5.04	50.54			
	Q	1.05	1.23	1.14	1.10	.64	.39	.40	.44	.49	.26	.69	1.21	9.04			
MEAN 45 YR	P4/-	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	3-4	.21	3-4	.20	3-4	.40	12-3	1.01	12-3	1.38	12-3	2.01	12-3	2.22	12-3	2.59	
MAXIMUMS FOR PERIOD OF RECORD																	
1957 to 1964	2-23 1962	.21	2-23 1962	.21	2-23 1962	.41	2-23 1962	1.12	2-23 1962	1.50	12-3 1964	2.01	12-3 1964	2.22	1-28 1957	2.99	
NOTES: Watershed conditions: About 19% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 38% in pasture and idle land, good cover April to October with fair cover remainder of year; 38% in woods, good cover; 2% in bare gullies; 3% urban. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1965. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1965. 1/ About 22% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 21 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																	
1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI								WATERSHED W-17 1/2 62.05			
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC					
1	.00	.00	.00	.00	.00	.00	.12	.01	.00	.00	.00	.00	.00	.00			
2	.00	.00	.94	.00	.32	.00	.50	.01	.00	.22	.00	.47	.00	.47			
3	.00	.00	.00	.90	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.39			
4	.00	.00	2.02	1.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02			
5	.07	.66	.00	.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	.99	.06	.00	.01	.00	.25	.01	.00	.00	.00	.00	.00	.00	.00			
7	.00	.00	.14	.02	.00	.00	.00	.00	.00	.00	.72	.00	.00	.00			
8	1.13	.00	.02	.00	.00	.00	.16	.24	.00	.00	.00	.00	.00	.00			
9	.04	.00	.70	.00	.33	.00	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.33	.00	.00	.02	.00	.00	.00	.00	.00	1.57			
11	.53	.00	.00	.41	.02	.15	2.61	.67	.00	.00	.00	.00	.75	.75			
12	.06	.01	.00	.55	.55	.46	1.24	.00	.00	.00	.11	.00	.00	.00			
13	.00	.83	.00	.83	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00			
14	.00	.02	.53	.00	.00	.01	.00	.00	.00	.25	.00	.00	.00	.00			
15	.00	.87	.00	.00	.00	.00	.28	3.62	.00	.13	.00	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.16	.01	.00	.00	.00	.00	.00	.00			
17	.00	.17	.00	.00	.00	.00	.00	.00	.74	.00	.99	.25	.00	.00			
18	.00	.14	.00	.00	.00	.00	.00	.00	.00	.13	.71	.00	.00	.00			
19	.25	.00	.14	.00	.00	.00	.03	.00	.00	.00	.91	.18	.00	.00			
20	.00	.00	.10	.00	.00	.00	.04	.00	.15	.00	.00	.04	.00	.00			
21	.00	.00	.00	.32	.00	.00	.19	.18	.00	.00	.00	.00	.00	.00			
22	.00	.00	.00	.99	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00			
23	.00	.00	.00	2.08	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00			
24	.16	.00	.78	.04	.00	.00	.15	.00	.00	.00	.29	.54	.00	.00			
25	.00	.00	.17	.12	.00	.00	.00	.41	.00	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.73	.00	.00	.01	.24	.00	.00	.00	.00	.00	.00			
27	.00	.17	.00	.07	.02	.02	.00	.00	2.87	.00	1.29	.00	.00	.00			
28	.00	.175	.50	.00	.00	.00	.00	.00	2.12	1.17	.16	.00	.00	.00			
29	.00	.00	.00	.00	.00	.20	.60	.00	.08	.00	.00	.00	.00	.00			
30	.00		.01	.00	.01	.23	.04	.00	.00	.00	.00	.27	.00	.00			
31	.50		.00		.33		.12	.01		.00		.00		.00			
TOTAL	3.73	3.10	6.07	9.87	1.91	1.42	6.26	5.53	5.96	2.06	5.18	8.48					
STA AV	3.95	4.66	4.51	5.11	3.65	3.77	4.61	3.66	4.43	2.22	4.93	5.04					
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 2, 4-9, 13-15, 17-20, 22, 25, 28-31, AND 33. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																	

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI				WATERSHED W-17				62.05
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	7.99	13.15	7.60	13.29	13.30	10.78	7.22	11.29	13.93	9.05	12.89	12.99		
2	8.40	11.29	156.05	11.90	12.99	10.00	13.41	13.51	13.34	19.17	11.03	14.64		
3	8.61	11.29	24.18	11.98	13.29	9.30	9.82	15.63	12.70	16.18	11.29	2463.76		
4	8.61	11.57	1327.09	558.62	12.99	9.30	8.01	13.93	13.29	10.01	11.02	527.07		
5	8.40	31.09	88.69	169.08	11.86	9.09	7.80	15.14	13.29	10.27	11.57	49.13		
6	45.23	25.50	25.03	93.77	10.27	9.09	7.80	17.59	12.99	10.04	11.84	26.55		
7	18.21	14.64	19.35	27.17	9.51	8.89	7.60	18.02	12.69	9.52	12.12	18.51		
8	187.50	12.42	17.22	18.89	9.76	8.20	7.60	19.46	12.69	10.00	12.40	15.03		
9	94.33	11.29	116.16	18.45	11.34	8.01	7.60	18.92	12.99	9.76	11.84	12.70		
10	15.28	11.57	55.62	17.61	12.12	7.80	7.06	18.46	13.29	9.51	11.56	70.42		
11	15.93	11.57	18.23	20.41	11.29	8.85	331.48	20.73	12.70	9.51	11.56	1062.17		
12	76.75	11.29	15.27	51.33	98.47	12.43	399.14	20.73	12.70	9.28	11.84	53.60		
13	16.07	54.88	15.27	432.39	14.44	13.55	14.42	20.29	13.29	9.28	11.84	26.95		
14	10.00	18.84	25.70	41.32	11.06	9.51	8.85	18.45	13.93	10.27	11.56	20.34		
15	8.70	263.26	36.89	23.09	10.51	9.76	9.61	552.47	13.93	10.27	11.56	17.59		
16	8.01	34.40	14.44	20.34	10.76	9.52	13.57	161.53	12.99	10.01	11.56	16.43		
17	8.40	19.82	11.84	17.18	11.31	9.52	14.06	9.61	13.30	10.51	48.88	16.86		
18	8.40	21.72	12.12	16.39	12.11	9.09	11.29	7.80	13.92	10.01	49.38	16.86		
19	11.94	21.30	11.86	15.63	12.70	8.19	10.76	8.01	13.92	9.28	132.35	16.43		
20	12.89	16.08	12.16	14.92	11.90	8.19	10.51	8.40	13.92	9.52	18.79	16.80		
21	10.01	13.93	12.70	15.50	11.60	8.40	10.25	9.09	13.92	10.00	11.06	16.00		
22	9.51	12.99	11.84	194.67	12.40	8.20	10.00	10.00	13.92	9.76	10.00	15.29		
23	9.28	12.69	11.03	1315.46	11.31	7.60	10.51	10.51	13.92	9.28	9.30	13.93		
24	9.28	12.40	12.53	113.62	10.51	7.60	10.76	11.29	13.60	9.52	9.06	53.94		
25	9.51	12.40	87.99	54.56	10.25	7.60	10.51	13.12	13.60	9.76	9.06	35.91		
26	9.28	11.34	23.40	870.30	9.09	7.60	11.03	19.94	13.30	9.51	8.40	17.08		
27	8.83	10.25	15.29	396.81	9.09	7.79	11.03	13.34	152.30	10.27	35.21	13.92		
28	8.61	9.35	60.83	45.94	10.51	7.79	10.51	12.11	729.07	23.12	284.58	13.30		
29	9.56	7.80	23.39	21.30	10.51	8.20	11.17	12.11	28.31	17.67	16.47	11.60		
30	10.25	-----	13.60	15.75	9.52	8.01	12.33	12.70	12.42	14.34	12.69	22.40		
31	16.06	-----	13.29	-----	10.30	-----	11.56	13.29	-----	13.98	-----	18.18		
MEAN	22.25	25.17	74.08	154.58	14.09	8.92	33.13	36.37	42.33	11.24	28.08	151.81		
INCHES	.51	.54	1.70	3.44	.32	.20	.76	.84	.94	.26	.62	3.49		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0007415. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

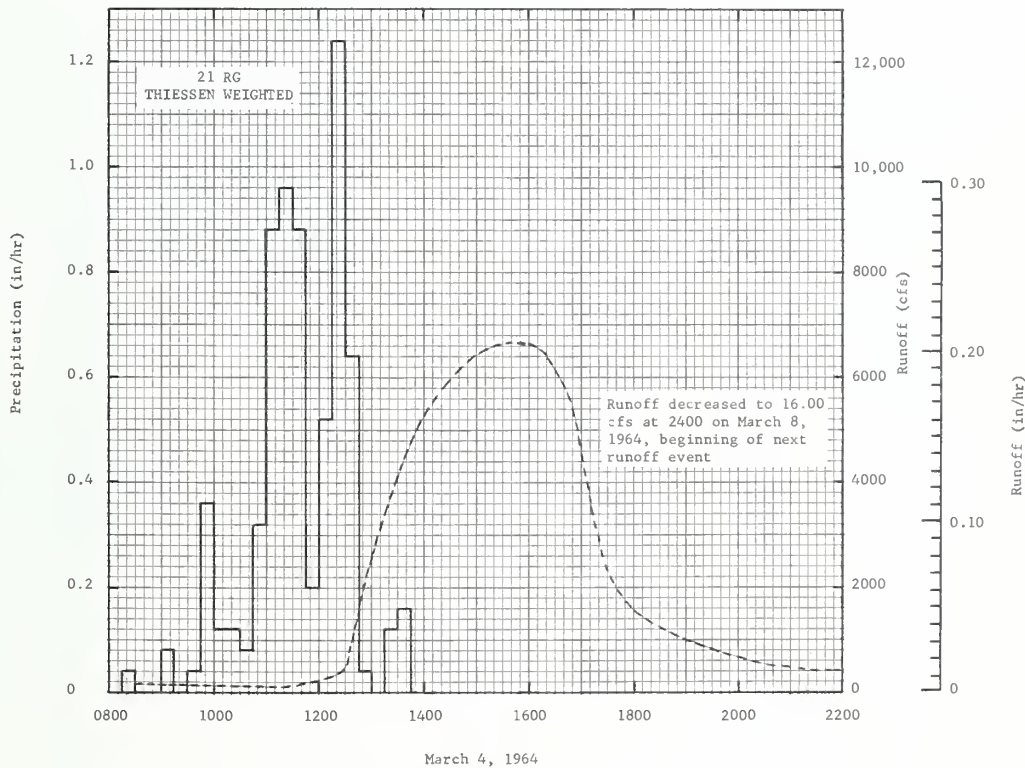
1964 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI				WATERSHED W-17				62.05
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF								
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of March 4-8, 1964 1/														
3-4	2/.32	3/.0372	3-4	21 RG	AVG4/		3-4	0830	184.85	.0000				
				0815	.00	.00		0942	134.48	.0059				
				0830	.04	.01		1050	114.29	.0103				
				0900	.00	.01		1122	132.59	.0123				
				0915	.08	.03		1156	202.29	.0152				
				0930	.00	.03		1222	396.93	.0192				
				0945	.04	.04		1232	584.45	.0218				
				1000	.36	.13		1238	996.89	.0242				
				1015	.12	.16		1254	2237.00	.0375				
				1030	.12	.19		1314	3400.00	.0665				
				1045	.08	.21		1328	3992.00	.0932				
				1100	.32	.29		1354	5145.58	.1544				
				1115	.88	.51		1412	5672.00	.2045				
				1130	.96	.75		1452	6356.00	.3284				
				1145	.88	.97		1514	6590.00	.4017				
				1200	.20	1.02		1538	6689.00	.4837				
				1215	.52	1.15		1602	6644.00	.5661				
				1230	1.24	1.46		1620	6419.00	.6267				
				1245	.64	1.62		1646	5618.00	.7072				
				1300	.04	1.63		1658	4838.64	.7395				
				1315	.00	1.63		1708	3976.00	.7622				
				1330	.12	1.66		1718	3160.00	.7806				
				1345	.16	1.70		1730	2377.00	.7977				
								1756	1634.24	.8246				
								1906	996.89	.8720				

Continued on next page

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000309. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.5-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN CAGES 2, 4-9, 13-15, 17-20, 22, 25, 28-31, AND 33) PRIOR TO 0815 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0830 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN CAGES. DAILY TOTALS FOR INDIVIDUAL RAIN CAGES LISTED ON P. 62.11-3.

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-17 62.05					
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)		
Watershed conditions: 19% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 17% in pasture and 21% idle, fair to good cover; 38% in woods, good cover; 2% in bare gullies; 3% urban.			Event of March 4-8, 1964 - Continued									
										2006	665.50	.8977
										2056	489.29	.9125
										2128	423.99	.9200
										2152	417.99	.9252
										2226	359.15	.9321
										2316	296.48	.9405
										2400	256.00	.9467
									3-5	0154	197.87	.9601
										0314	180.59	.9679
										0600	114.29	.9805
										0724	96.99	.9850
										1458	48.31	1.0020
										1928	36.11	1.0079
										2400	29.81	1.0125
									3-6	2400	20.25	1.0311
									3-7	2400	18.44	1.0454
									3-8	2400	<u>1</u> / 16.00	1.0582

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000309. 1/ BEGINNING OF NEXT RUNOFF EVENT.



OXFORD, MISSISSIPPI WATERSHED W-17

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI						WATERSHED W-191/				62.06	
						AREA—243 ACRES											
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	ANNUAL			
1964	P ² /	3.70	2.97	5.06	9.87	2.03	.98	5.05	5.58	5.44	2.08	4.32	8.91	55.99			
	Q	.15	.11	.85	2.31	.07	.00	.52	.38	.39	.01	.12	3/3.29	3/ 8.20			
STA AV ² /P		3.98	4.82	4.45	5.29	3.36	3.56	4.39	3.86	4.61	1.98	4.48	5.18	49.96			
	(57-64) Q	.72	.85	.64	.65	.26	.15	.19	.21	.48	.04	.32	.84	5.35			
MEAN P ⁴ /45 YR		5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	12-3	.39	12-3	.35	12-3	.62	12-3	1.41	12-3	1.67	12-3	2.49	12-3	2.56	12-3	2.83	
MAXIMUMS FOR PERIOD OF RECORD																	
1957 TO	9-19	1.05	9-19	.66	2-23	.91	12-3	1.41	2-23	1.77	12-3	2.49	12-3	2.56	1-28	3.23	
1964	1958		1958		1962		1964		1962		1964		1964		1957		
NOTES: Watershed conditions: About 2% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 31% in pasture and idle land, good cover April to October with fair cover remainder of year; 66% in woods, good cover; 1% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1965. They differ significantly from those previously reported. Changes occurred over a period of 4 years prior to 1965. 1/ About 2% of drainage area above small desilting and retention dams. 2/ Monthly precipitation from rain gage 2. 3/ Precipitation and runoff records began Jan. 1957. Watershed discontinued Dec. 31, 1964. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																	
MONTHLY PRECIPITATION AND RUNOFF (inches): (Revised) Changed values <u>underlined></u> .																	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	ANNUAL			
1958	P	2.42	1.64	3.11	<u>7.67</u>	4.31	6.81	7.07	1.41	12.92	<u>.93</u>	3.21	1.79	<u>53.29</u>			
	Q	.07	.02	.02	<u>1.20</u>	.77	.26	.27	.01	2.47	.00	.00	.00	5.09			
1964 DAILY PRECIPITATION (inches)																	
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	OEC	62.06				
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
2	.00	.00	.79	.00	.25	.00	.14	.00	.00	.18	.00	.00	.27				
3	.00	.00	.00	1.06	.00	.00	.00	.00	.00	.00	.00	.00	5.36				
4	.00	.00	1.37	1.39	.00	.00	.00	.00	.00	.00	.00	.00	.00				
5	.05	.64	.00	.47	.00	.00	.00	.00	.00	.00	.00	.00	.00				
6	1.00	.06	.00	.00	.00	.11	.00	.00	.00	.00	.00	.00	.00				
7	.00	.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	.46	.00				
8	1.10	.00	.02	.00	.00	.00	.10	.94	.00	.00	.00	.00	.00				
9	.06	.00	1.08	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00				
10	.00	.00	.03	.00	.41	.00	.00	.00	.00	.00	.00	.00	1.54				
11	.54	.00	.00	.40	.05	.22	2.27	.83	.00	.00	.00	.00	.75				
12	.05	.00	.00	.50	.80	.00	1.46	.00	.00	.00	.00	.00	.00				
13	.00	.76	.00	.70	.00	.00	.00	.00	.00	.00	.00	.00	.00				
14	.00	.02	.20	.00	.00	.10	.00	.00	.00	.13	.00	.00	.00				
15	.00	.88	.00	.00	.00	.00	.00	2.95	.00	.15	.00	.00	.00				
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00				
17	.00	.13	.00	.00	.00	.00	.00	.00	.64	.00	.60	.16	.00				
18	.00	.12	.00	.00	.00	.00	.00	.00	.00	.22	.70	.00	.00				
19	.29	.00	.15	.00	.00	.00	.00	.00	.00	.00	1.00	.15	.00				
20	.00	.00	.11	.00	.00	.00	.21	.00	.00	.00	.00	.04	.00				
21	.00	.00	.00	.41	.00	.00	.09	.07	.00	.00	.00	.00	.00				
22	.00	.00	.00	.95	.00	.00	.00	.08	.00	.00	.00	.00	.00				
23	.00	.00	.00	2.29	.00	.00	.00	.00	.00	.00	.00	.00	.00				
24	.05	.00	.80	.05	.00	.00	.10	.00	.00	.00	.24	.49	.00				
25	.00	.00	.09	.15	.00	.00	.00	.65	.00	.00	.00	.00	.00				
26	.00	.00	.00	1.40	.00	.00	.00	.06	.00	.00	.00	.00	.00				
27	.00	.17	.00	.10	.02	.00	.00	.00	2.55	.00	1.20	.00	.00				
28	.00	.195	.25	.00	.00	.00	.00	.00	2.20	1.40	.12	.00	.00				
29	.00	.00	.00	.00	.00	.26	.44	.00	.05	.00	.00	.00	.00				
30	.00	-----	.00	.00	.02	.29	.00	.00	.00	.00	.00	.15	.00				
31	.56	-----	.00	-----	.33	-----	.24	.00	-----	.00	-----	.00	.00				
TOTAL	3.70	2.97	5.06	9.87	2.03	.98	5.05	5.58	5.44	2.08	4.32	8.91	55.99				
STA AV	3.98	4.82	4.45	5.29	3.36	3.56	4.39	3.86	4.61	1.98	4.48	5.18	49.96				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES FROM RAIN GAGE 2. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																	

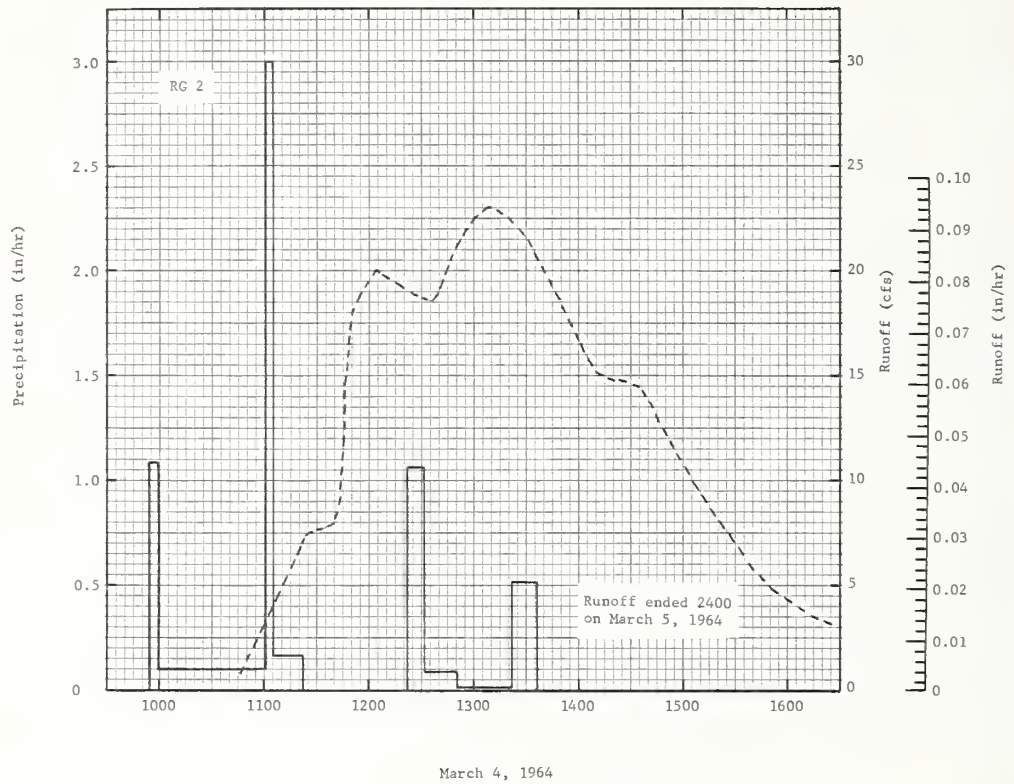
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-19		62.06
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.46	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.01	.09	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	4.14	4.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	25.01
5	.00	.02	.29	.52	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.18
6	.11	.00	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09
7	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
8	.99	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.00
9	.20	.00	3.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.37	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.75
11	.05	.00	.03	.00	.00	.00	1.82	.00	.00	.00	.00	.00	.00	5.97
12	.17	.00	.00	.04	.73	.00	3.46	.00	.00	.00	.00	.00	.00	.11
13	.00	.07	.00	1.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	1.02	.00	.00	.00	.00	.00	3.85	.00	.00	.00	.00	.00	.00
16	.00	.06	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.54	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	10.89	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.04	.62	.00	.00	.00	.00	.00	.00	.00	.00	.00	.14
25	.00	.00	.11	.21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	3.94	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.87	.00	.00	.00	.00	1.60	.00	.26	.00	.00	.00
28	.00	.00	.04	.06	.00	.00	.00	.00	2.44	.13	.40	.00	.00	.00
29	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07
31	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.17
MEAN	.05	.04	.28	.79	.02	.00	.17	.13	.13	.00	.04	1.08		
INCHES	.15	.11	.85	2.31	.07	.00	.52	.38	.39	.01	.12	3.29		

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.09795. QUALITY OF RECORDS: POOR, ESTIMATED TO BE WITHIN 20% OF ACTUAL.

1964			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-19				62.06	
ANTECEDEENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of March 4-5, 1964 <u>1/</u>																
3-4	<u>2/.60</u>	<u>3/.0579</u>	3-4	RG	2		3-4	1046	.85	.0000						
				0954	.00	.00		1124	7.43	.0107						
				0959	1.08	.09		1140	7.95	.0190						
				1101	.10	.20		1150	18.00	.0279						
				1105	3.00	.40		1204	20.00	.0459						
				Watershed conditions: 2% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 31% in pasture and idle, fair to good cover; 66% in woods, good cover; 1% in bare gullies.												

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.00408. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.6-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ RAINFALL PRIOR TO 0954 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 1046 ON 3-4-64.



OXFORD, MISSISSIPPI WATERSHED W-19

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED W-241/ AREA—512 ACRES 62.07							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 P ₂ / Q	3.69 .34	3.17 .30	5.75 1.03	10.25 4.54	1.73 .06	1.67 .00	6.21 .66	5.13 .30	5.74 .48	2.03 .02	4.85 .37	8.78 3.10	59.00 11.20
STA AV ₃ /P (57-64) Q	3.98 1.16	4.75 1.40	4.53 .95	4.99 1.29	3.76 .50	3.77 .16	4.43 .18	3.48 .13	4.22 .23	2.21 .07	4.86 .56	5.01 1.04	49.99 7.67
MEAN P ₄ / 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-12	.55	4-23	.44	4-23	.66	12-3	1.18	12-3	1.48	12-3	2.03	12-3	2.19	12-3	2.71

MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO 19 64	2-23 1962	1.04	2-23 1962	.90	2-23 1962	1.36	2-23 1962	1.64	2-23 1962	1.86	1-31 1957	2.08	1-30 1957	3.16	1-28 1957	4.37

NOTES: Watershed conditions: About 3% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 22% in pasture and idle land, good cover April to October with fair cover remainder of year; 73% in woods, good cover; 2% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1962. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1962. 1/ About 9% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 4 and 30. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.

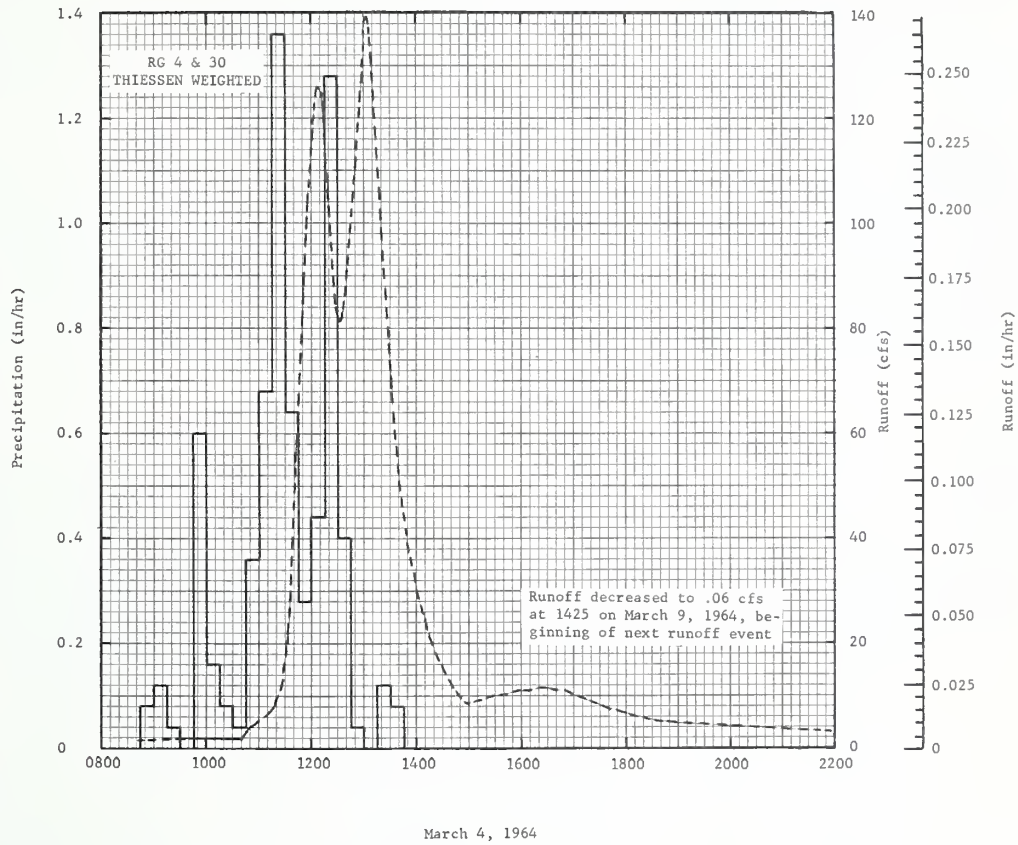
MONTHLY PRECIPITATION AND RUNOFF (inches): (Revised) Changed values underlined.

MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1961 P Q	.89 .00	8.38 <u>1.94</u>	8.66 <u>2.65</u>	3.82 <u>.97</u>	2.59 <u>.40</u>	2.40 .02	3.48 .05	3.89 .13	1.87 .05	1.01 .01	7.96 .88	8.32 <u>2.08</u>	53.27 <u>9.18</u>

1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI WATERSHED W-24 62.07							
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.00	.00	.00	.00	.34	.00	.00	.00	.00	.00	.00
2	.00	.00	.87	.00	.20	.00	.22	.03	.00	.03	.00	.00	.28
3	.00	.00	.00	.84	.00	.00	.00	.00	.00	.00	.00	.00	4.78
4	.00	.00	2.06	1.44	.00	.00	.00	.00	.00	.00	.00	.00	.02
5	.05	.72	.00	.56	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.97	.07	.00	.00	.00	.49	.08	.00	.00	.00	.00	.00	.00
7	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	.73	.00
8	1.12	.00	.03	.00	.00	.00	.08	.13	.00	.00	.00	.00	.00
9	.04	.00	.67	.00	.22	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.05	.00	.40	.02	.00	.00	.00	.00	.00	.00	1.53
11	.46	.00	.00	.37	.03	.14	1.75	1.03	.00	.00	.00	.00	.73
12	.08	.02	.00	.52	.58	.47	2.21	.00	.00	.00	.19	.00	.00
13	.00	.81	.00	1.09	.00	.00	.00	.00	.00	.18	.00	.00	.00
14	.00	.02	.34	.00	.00	.00	.00	.00	.00	.39	.00	.00	.00
15	.00	.89	.00	.00	.00	.00	.17	3.01	.00	.13	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.12	.01	.00	.00	.00	.00	.00
17	.00	.17	.00	.00	.00	.00	.00	.00	.72	.00	.65	.26	.00
18	.00	.14	.00	.00	.00	.00	.00	.00	.00	.15	.67	.00	.00
19	.29	.00	.13	.00	.00	.00	.00	.00	.00	.00	.96	.16	.00
20	.00	.00	.12	.00	.00	.00	.13	.00	.21	.00	.00	.04	.00
21	.00	.00	.00	.29	.00	.00	.05	.10	.00	.00	.00	.00	.00
22	.00	.00	.00	.94	.00	.00	.00	.11	.00	.00	.00	.00	.00
23	.00	.00	.00	2.19	.00	.03	.00	.00	.00	.00	.00	.00	.00
24	.23	.00	.77	.10	.00	.00	.34	.00	.00	.00	.30	.70	.00
25	.00	.00	.17	.08	.00	.00	.00	.42	.00	.00	.00	.00	.00
26	.00	.00	.00	1.75	.00	.00	.00	.29	.00	.00	.00	.00	.00
27	.00	.14	.00	.08	.00	.05	.00	.00	2.84	.00	1.18	.00	.00
28	.00	.195	.48	.00	.00	.00	.00	.00	1.92	1.15	.17	.00	.00
29	.00	.00	.00	.00	.00	.22	.60	.00	.05	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.25	.01	.00	.00	.00	.00	.28	.00
31	.45	.00	.00	.00	.30	.00	.11	.00	.00	.00	.00	.00	.00
TOTAL	3.69	3.17	5.75	10.25	1.73	1.67	6.21	5.13	5.74	2.03	4.85	8.78	
STA AV	3.98	4.75	4.53	4.99	3.76	3.77	4.43	3.48	4.22	2.21	4.86	5.01	

NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIENSEN WEIGHTED FROM RAIN GAGES 4 AND 30. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-24				62.07
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00		
2	.00	.00	1.92	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00		
3	.00	.00	.07	.20	.07	.00	.00	.00	.00	.00	.00	.00	.00	42.63		
4	.00	.00	13.35	15.99	.02	.00	.00	.00	.00	.00	.00	.00	.00	4.32		
5	.00	.80	1.20	4.54	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.80		
6	.70	.55	.28	1.86	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.01		
7	.00	.00	.15	.63	.00	.00	.00	.00	.00	.00	.00	.00	.00	.80		
8	4.57	.00	.15	.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.45		
9	.84	.00	1.83	.24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.39		
10	.05	.00	.61	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.83		
11	.12	.00	.09	.28	.00	.00	1.69	.17	.00	.00	.00	.00	.00	11.34		
12	.90	.00	.11	.62	.95	.00	12.22	.00	.00	.00	.00	.00	.00	.00		
13	.03	.76	.15	13.40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
14	.00	.05	.13	1.39	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00		
15	.00	4.25	.07	.95	.00	.00	.22	6.17	.00	.00	.00	.00	.00	.00		
16	.00	.09	.00	1.02	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00		
17	.00	.00	.00	.58	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
18	.00	.00	.00	.35	.00	.00	.00	.00	.00	.00	.00	.00	1.06	.00		
19	.04	.00	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	2.58	.00		
20	.01	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
21	.00	.00	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
22	.00	.00	.00	3.33	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
23	.00	.00	.09	26.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
24	.00	.00	.50	3.65	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.18		
25	.00	.00	1.37	.70	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
26	.00	.00	.00	12.49	.00	.00	.00	.16	.00	.00	.00	.00	.00	.00		
27	.00	.00	.00	6.90	.00	.00	.00	.00	5.27	.00	.00	1.99	.00	.00		
28	.00	.00	.18	.83	.00	.00	.00	.00	5.08	.37	.00	2.12	.00	.00		
29	.00	.00	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
30	.00	-----	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01		
31	.06	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00	-----	.00		
MEAN	.23	.22	.72	3.25	.04	.00	.46	.21	.35	.01	.27	.27	.27	2.15		
INCHES	.34	.30	1.03	4.54	.06	.00	.66	.30	.48	.02	.37	.37	.37	3.10		
NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.046488. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.																
1964 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI						WATERSHED W-24				62.07
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME DF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME DF DAY	RATE (cfs)	ACC. (inches)						
Event of March 4-6, 1964 1/																
3-4	2/.37	3/.0411	3-4	2 RG	AVG 4/		3-4	0844	1.47	.0000						
Watershed conditions: 3% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 7% in pasture and 15% idle, fair to good cover; 73% in woods, good cover; 2% in bare gullies.																



OXFORD, MISSISSIPPI WATERSHED W-24

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED W-28 ^{1/} AREA—1,080 ACRES (1.69 SQ. MILES)								62.08		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ^{2/}	3.51	3.21	6.30	10.11	1.25	1.07	6.39	5.33	6.41	2.47	4.81	7.72	58.58		
	Q	.04	.05	.54	.99	.01	.00	.22	.21	.26	.01	.09	1.19	3.61		
STA	AV ^{3/} P	3.83	4.72	4.55	4.93	3.44	3.75	4.72	2.99	4.68	2.30	4.99	4.89	49.79		
(57-64)	Q	.43	.47	.27	.34	.13	.07	.11	.06	.17	.04	.17	.31	2.57		
MEAN	P ^{4/}	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21		
45	YR															
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-4	.28	3-4	.22	3-4	.35	3-4	.46	3-4	.48	12-3	.54	12-3	.60	12-3	.82
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1964	9-9 1959	.58	9-9 1959	.42	9-9 1959	.54	2-23 1962	.70	1-31 1957	.92	1-31 1957	1.45	1-30 1957	2.02	1-27 1957	2.68
NOTES: Watershed conditions: About 23% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 36% in pasture and idle land, good cover April to October with fair cover remainder of year; 38% in woods, good cover; 3% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1962. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1962. 1/ About 60% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 5, 6, and 7. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI						WATERSHED W-28		62.08		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00				
2	.00	.00	.95	.00	.21	.00	.22	.00	.00	.33	.00	.00				
3	.00	.00	.00	.85	.00	.00	.00	.00	.00	.00	.00	.00				
4	.00	.00	2.26	1.27	.00	.00	.00	.00	.00	.00	.00	.00				
5	.09	.76	.00	.63	.00	.00	.00	.00	.00	.00	.00	.00				
6	.96	.07	.00	.04	.00	.09	.03	.00	.00	.00	.00	.00				
7	.00	.00	.12	.01	.00	.00	.00	.00	.00	.00	.66	.00				
8	1.04	.00	.02	.00	.00	.00	.15	.37	.00	.00	.00	.00				
9	.02	.00	.62	.00	.24	.00	.00	.00	.00	.00	.00	.00				
10	.00	.00	.01	.00	.25	.00	.00	.00	.00	.00	.00	.00				
11	.52	.00	.00	.40	.01	.19	2.32	.60	.00	.00	.00	.00				
12	.08	.01	.00	.64	.14	.12	1.59	.00	.00	.00	.08	.00				
13	.00	.79	.00	.80	.00	.00	.00	.00	.00	.17	.00	.00				
14	.00	.02	.63	.00	.00	.00	.00	.00	.00	.41	.00	.00				
15	.00	.89	.00	.00	.00	.00	.10	3.85	.00	.10	.00	.00				
16	.00	.00	.00	.00	.00	.00	.85	.00	.00	.00	.00	.00				
17	.00	.20	.00	.00	.00	.00	.00	.00	.95	.00	.91	.24				
18	.00	.12	.00	.00	.00	.00	.00	.00	.00	.08	.61	.00				
19	.22	.00	.13	.00	.00	.00	.00	.00	.00	.00	.85	.18				
20	.00	.00	.14	.00	.00	.00	.01	.00	.54	.00	.00	.04				
21	.00	.00	.00	.26	.00	.00	.06	.08	.00	.00	.00	.00				
22	.00	.00	.00	1.00	.00	.00	.00	.05	.00	.00	.00	.00				
23	.00	.00	.00	1.98	.00	.04	.00	.00	.00	.00	.00	.00				
24	.08	.00	.77	.00	.00	.00	.01	.00	.00	.00	.31	.32				
25	.00	.00	.23	.16	.00	.00	.00	.12	.00	.00	.00	.00				
26	.00	.00	.00	1.94	.00	.00	.03	.25	.00	.00	.00	.00				
27	.00	.21	.00	.13	.01	.00	.00	.00	2.87	.00	1.23	.00				
28	.00	.14 ⁵	.42	.00	.00	.00	.00	.00	1.97	1.38	.16	.00				
29	.00	.00	.00	.00	.00	.20	.42	.00	.08	.00	.00	.00				
30	.00	-----	.00	.00	.00	.43	.08	.00	.00	.00	.00	.13				
31	.50	-----	.00	-----	.39	-----	.48	.01	-----	.00	-----	.00				
TOTAL	3.51	3.21	6.30	10.11	1.25	1.07	6.39	5.33	6.41	2.47	4.81	7.72				
STA AV	3.83	4.72	4.55	4.93	3.44	3.75	4.72	2.99	4.68	2.30	4.99	4.89				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIENSEN WEIGHTED FROM RAIN GAGES 5, 6, AND 7. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																

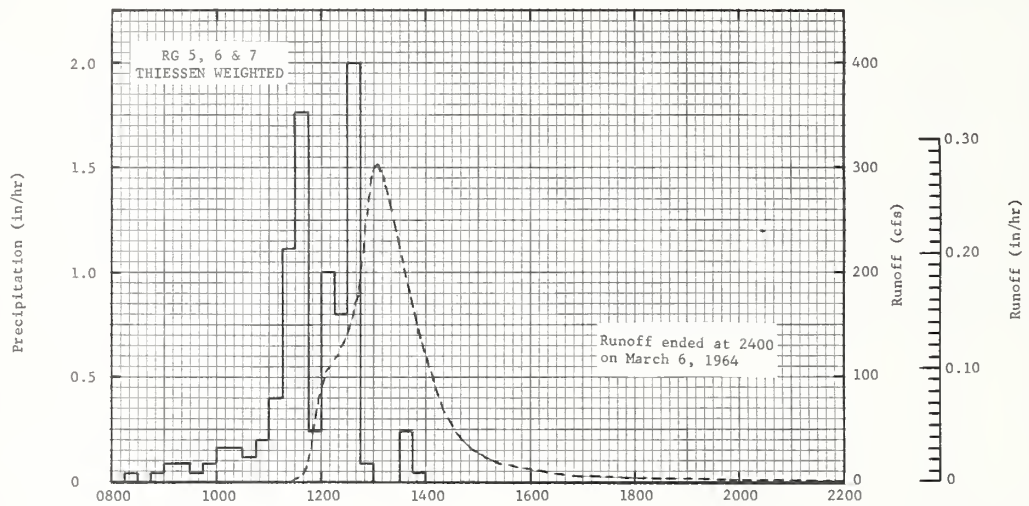
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-28		62.08
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.00	.00	.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	
2	.00	.00	.89	.00	.12	.00	.00	.00	.00	.03	.00	.00	.00	
3	.00	.00	.00	.02	.04	.00	.00	.00	.00	.00	.00	.00	22.92	
4	.00	.00	21.56	3.33	.00	.00	.00	.00	.00	.00	.00	.00	4.43	
5	.00	.25	.34	1.29	.00	.00	.00	.00	.00	.00	.00	.00	.70	
6	.00	.00	.06	.77	.00	.00	.00	.00	.00	.00	.00	.00	.56	
7	.00	.00	.00	.22	.00	.00	.00	.00	.00	.00	.00	.00	.56	
8	1.33	.00	.07	.17	.00	.00	.00	.00	.00	.00	.00	.00	.46	
9	.20	.00	.83	.11	.00	.00	.00	.00	.00	.00	.00	.00	.33	
10	.00	.00	.16	.09	.00	.00	.00	.00	.00	.00	.00	.00	3.29	
11	.00	.00	.00	.12	.00	.00	2.68	.00	.00	.00	.00	.00	12.72	
12	.40	.00	.00	.56	.00	.00	6.43	.00	.00	.00	.00	.00	.92	
13	.00	.26	.00	3.03	.00	.00	.00	.00	.00	.00	.00	.00	.61	
14	.00	.00	.35	.31	.00	.00	.00	.00	.00	.00	.00	.00	.49	
15	.00	1.69	.04	.14	.00	.00	.00	9.24	.00	.00	.00	.00	.52	
16	.00	.00	.00	.04	.00	.00	.71	.39	.00	.00	.00	.00	.52	
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.67	.36	
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.30	.77	
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.22	.00	1.40	
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.87	
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	
22	.00	.00	.00	.77	.00	.00	.00	.00	.00	.00	.00	.00	.27	
23	.00	.00	.00	16.60	.00	.00	.00	.00	.00	.00	.00	.00	.36	
24	.00	.00	.08	.49	.00	.00	.00	.00	.00	.00	.00	.00	.39	
25	.00	.00	.21	.46	.00	.00	.00	.00	.00	.00	.00	.00	.24	
26	.00	.00	.00	11.70	.00	.00	.00	.00	.00	.00	.00	.00	.06	
27	.00	.00	.00	4.22	.00	.00	.00	.00	5.88	.00	.40	.00	.00	
28	.00	.00	.17	.21	.00	.00	.00	.00	5.82	.56	1.59	.00	.00	
29	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00	.00	
30	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00	.00	
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
MEAN	.06	.08	.80	1.49	.01	.00	.32	.31	.39	.02	.14	.14	1.74	
INCHES	.04	.05	.54	.99	.01	.00	.22	.21	.26	.01	.09	.09	1.19	

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0220387. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1964			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-28				62.08	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of March 4-6, 1964 ^{1/}																
3-4	2/.09	.0000	3-4	3 RG	AVG 3/		3-4	1124	.00	.0000						
				0815	.00	.00		1140	7.66	.0009						
				0830	.04	.01		1158	80.40	.0130						
				0845	.00	.01		1204	107.60	.0216						
				0900	.04	.02		1226	133.10	.0621						
				0915	.08	.04		1244	192.60	.1070						
				0930	.08	.06		1304	303.00	.1828						
				0945	.04	.07		1352	145.00	.3473						
				1000	.08	.09		1444	38.42	.4203						
				1015	.16	.13		1618	9.99	.4551						
				1030	.16	.17		1804	3.44	.4660						
				1045	.12	.20		1950	2.21	.4706						
				1100	.20	.25		2230	.63	.4741						
				1115	.40	.35		2400	.55	.4749						
				1130	1.12	.63	3-5	2400	.11	.4823						
				1145	1.76	1.07	3-6	2400	.00	.4836						
				1200	.24	1.13										
				1215	1.00	1.38										
				1230	.80	1.58										
				1245	2.00	2.08										
				1300	.08	2.10										
				1330	.00	2.10										
				1345	.24	2.16										
				1400	.04	2.17										
Watershed conditions: 23% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 7% in pasture and 29% idle, fair to good cover; 38% in woods, good cover; 3% in bare gullies.																

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0009183. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.8-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 5, 6 AND 7) PRIOR TO 0815 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3.



OXFORD, MISSISSIPPI WATERSHED W-28

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED W-32 1/2 AREA— 20,000 ACRES (31.3 SQ. MILES)								62.10		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ² / _Q	3.87 .63	3.14 .42	6.25 1.84	8.97 4.06	2.35 .15	1.86 .03	6.34 .66	6.38 1.13	6.11 1.15	2.02 .05	5.27 .85	8.21 5.12	60.77 16.09			
STA AV ³ / _P (57-64) Q	3.93 1.20	4.76 1.53	4.67 1.30	5.26 1.38	4.08 .82	3.65 .20	4.63 .29	3.32 .27	4.93 .63	2.13 .11	5.01 .74	5.14 1.60	51.51 10.07			
MEAN P ⁴ / _{45 YR}	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	12-3	.41	12-3	.40	12-3	.76	12-3	1.94	12-3	2.45	12-3	3.48	12-3	3.72	11-27	4.33
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO 1964	2-23 1962	.57	2-23 1962	.56	2-23 1962	.83	12-3 1964	1.94	12-3 1964	2.45	12-3 1964	3.48	12-3 1964	3.72	11-27 1964	4.33
NOTES: Watershed conditions: About 29% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 39% in pasture and idle land, good cover April to October with fair cover remainder of year; 30% in woods, good cover; 2% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1964. They differ significantly from those previously reported. Changes occurred over a period of 4 years prior to 1964. 1/ About 14% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 10 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI WATERSHED W-32								62.10		
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00			
2	.00	.00	1.02	.00	.38	.00	.93	.01	.00	.32	.00	.00	.77			
3	.00	.00	.00	.58	.00	.00	.00	.00	.00	.00	.00	.00	4.16			
4	.00	.00	1.61	1.15	.00	.00	.00	.00	.00	.00	.00	.00	.01			
5	.08	.61	.00	.58	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	1.01	.08	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00			
7	.00	.00	.27	.03	.00	.00	.00	.00	.00	.00	.69	.00	.00			
8	1.14	.00	.02	.00	.00	.00	.09	.52	.00	.00	.00	.00	.00			
9	.03	.00	.76	.00	.65	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.27	.00	.00	.15	.00	.00	.00	.00	1.56			
11	.61	.00	.00	.46	.01	.52	2.53	.94	.00	.00	.00	.77	.00			
12	.06	.03	.00	.63	.70	.55	.51	.00	.00	.00	.12	.00	.00			
13	.00	.86	.00	.56	.00	.00	.00	.00	.00	.02	.00	.00	.00			
14	.00	.04	.81	.00	.00	.01	.00	.00	.00	.14	.00	.00	.00			
15	.00	.85	.00	.00	.00	.00	.26	3.75	.00	.15	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.10	.04	.00	.00	.00	.00	.00			
17	.00	.14	.00	.00	.00	.00	.00	.00	.68	.00	.88	.30	.00			
18	.00	.17	.00	.00	.00	.00	.00	.00	.00	.12	.68	.00	.00			
19	.19	.00	.16	.00	.00	.00	.01	.00	.00	.00	.91	.15	.00			
20	.00	.00	.05	.00	.00	.00	.01	.00	.00	.00	.00	.03	.00			
21	.00	.00	.00	.38	.00	.00	.41	.35	.00	.00	.00	.00	.00			
22	.00	.00	.00	.94	.00	.01	.00	.21	.00	.00	.00	.00	.00			
23	.00	.00	.00	1.86	.00	.11	.00	.00	.00	.00	.00	.00	.00			
24	.17	.00	.76	.00	.00	.00	.03	.00	.00	.00	.27	.34	.00			
25	.00	.00	.18	.12	.00	.00	.00	.27	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.64	.00	.00	.00	.14	.00	.00	.00	.00	.00			
27	.00	.19	.00	.04	.02	.01	.00	.00	3.10	.00	1.57	.00	.00			
28	.00	.165	.59	.00	.00	.00	.00	.00	2.28	1.27	.15	.00	.00			
29	.00	.01	.00	.00	.00	.26	1.34	.00	.05	.00	.00	.00	.00			
30	.00	-----	.00	.00	.02	.24	.03	.00	.00	.00	.00	.12	.00			
31	.58	-----	.00	-----	.30	-----	.00	.00	-----	.00	-----	.00	.00			
TOTAL	3.87	3.14	6.25	8.97	2.35	1.86	6.34	6.38	6.11	2.02	5.27	8.21				
STAAV	3.93	4.76	4.67	5.26	4.08	3.65	4.63	3.32	4.93	2.13	5.01	5.14				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIENSEN WEIGHTED FROM RAIN GAGES 3, 10-14, 20, 21, 24, AND 26. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-32 62.10	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.07	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	186.79	.00	.14	.00	32.06	.00	.00	11.36	.00	.00	.00
3	.00	.00	15.57	.19	.17	.00	1.07	.00	.00	1.17	.00	2772.37	.00
4	.00	.00	733.57	539.49	.16	.00	.00	.00	.00	.00	.00	353.39	.00
5	.00	13.56	55.11	131.88	.06	.00	.00	.00	.00	.00	.00	10.87	.00
6	67.13	3.37	19.47	63.11	.01	1.36	.00	.00	.00	.00	.00	2.27	.00
7	9.39	.00	12.41	11.20	.01	.09	.00	.00	.00	.00	.51	.53	.00
8	242.11	.00	21.23	7.18	.00	.00	.00	.00	.00	.00	.22	.36	.00
9	79.63	.00	174.95	7.18	.59	.00	.00	.00	.00	.00	.00	.19	.00
10	10.01	.00	45.51	6.97	.17	.00	.00	.00	.00	.00	.00	53.90	.00
11	8.04	.00	9.89	6.15	.04	4.96	177.57	59.64	.00	.00	.00	1026.84	.00
12	98.20	.00	7.90	57.03	121.80	14.78	170.01	.78	.00	.00	.00	29.40	.00
13	8.76	60.81	7.41	267.76	1.65	1.71	.04	.00	.00	.00	.00	8.27	.00
14	3.44	6.95	67.80	18.40	.28	.00	.02	.00	.00	.00	.00	2.57	.00
15	.40	234.12	53.97	4.84	.04	.00	1.14	730.25	.00	.00	.00	1.99	.00
16	.04	26.55	4.85	.37	.00	.00	7.28	157.65	.00	.00	.04	1.08	.00
17	.01	4.56	1.28	.40	.00	.00	.06	1.19	.00	.00	30.24	1.51	.00
18	.00	.22	.51	.24	.00	.00	.01	.00	.00	.00	20.82	.15	.00
19	.00	.14	.38	.19	.00	.00	.01	.00	.00	.00	148.84	.73	.00
20	.00	.00	.24	.09	.00	.00	.00	.00	.00	.00	9.25	2.10	.00
21	.00	.00	.00	.06	.00	.00	.25	.71	.00	.00	.38	1.04	.00
22	.00	.00	.01	200.00	.00	.00	.00	.31	.00	.00	.00	.61	.00
23	.00	.00	.02	1207.22	.00	.00	.00	.00	.00	.00	.00	.29	.00
24	.00	.00	1.86	54.75	.00	.00	.00	.00	.00	.00	.00	8.01	.00
25	.00	.00	62.42	9.26	.00	.00	.00	.02	.00	.00	.00	5.74	.00
26	.00	.00	7.03	641.65	.00	.00	.00	.55	.00	.00	.00	.74	.00
27	.00	.00	1.21	159.11	.00	.00	.00	.00	267.67	.00	130.95	.12	.00
28	.00	.00	52.18	17.49	.00	.00	.00	.00	686.71	28.75	368.89	.09	.00
29	.00	.00	3.85	.26	.00	.00	162.12	.00	7.27	1.49	2.47	.07	.00
30	.00	.00	.01	.21	.00	.00	5.84	.00	1.60	.12	.00	13.25	.00
31	.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.33	.00
MEAN	17.02	12.08	49.91	113.75	4.04	.76	17.98	30.68	32.11	1.38	23.75	138.70	.00
INCHES	.63	.42	1.84	4.06	.15	.03	.66	1.13	1.15	.05	.85	5.12	.00

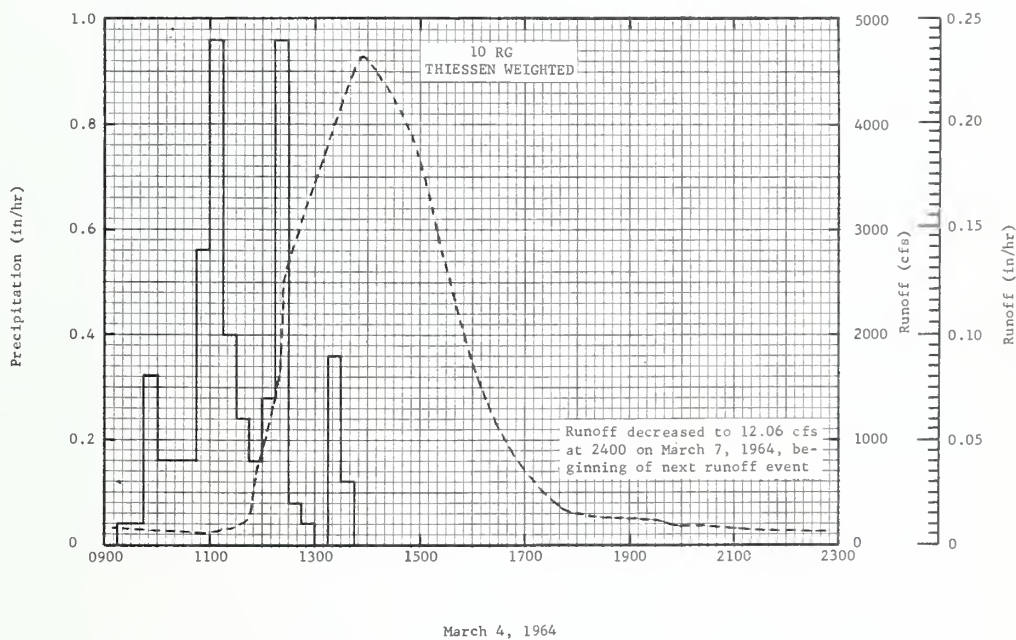
NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0011901. QUALITY OF RECORDS: GOOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL.

1964			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-32				62.10	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (c/s)	ACC. (inches)						
Event of March 4-6, 1964 1/																
3-4	2/ .36	3/ .0451	3-4	10 RG	AVG 4/		3-4	0824	183.26	.0000						
				0915	.00	.00		0952	135.80	.0116						
				0930	.04	.01		1038	123.20	.0165						
				0945	.04	.02		1114	157.36	.0207						
				1000	.32	.10		1144	234.92	.0255						
				1015	.16	.14		1154	763.26	.0297						
				1030	.16	.18		1220	1652.00	.0556						
				1045	.16	.22		1224	2507.00	.0625						
				1100	.56	.36		1300	3470.00	.1514						
				1115	.96	.60		1326	4081.36	.2325						
				1130	.40	.70		1352	4640.00	.3262						
				1145	.24	.76		1452	3830.00	.5362						
				1200	.16	.80		1550	2012.00	.6762						
				1215	.28	.87		1624	1211.59	.7215						
				1230	.96	1.11		1710	612.72	.7562						
				1245	.08	1.13		1720	500.00	.7608						
				1300	.04	1.14		1740	370.00	.7680						
				1315	.00	1.14		1828	274.68	.7808						
				1330	.36	1.23		1850	261.00	.7856						
				1345	.12	1.26		1918	249.00	.7915						

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000496. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.10-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 3, 10-14, 20, 21, 24 AND 26) PRIOR TO 0915 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0824 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3.

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI			WATERSHED W-32			62.10
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)
Watershed conditions: 29% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 15% in pasture and 24% idle, fair to good cover; 30% in woods, good cover; 2% in bare gullies.			Event of March 4-6, 1964 - Continued						
								1940	211.78
								1954	190.90
								2004	196.60
								2106	160.93
								2144	135.80
								2400	119.60
							3-5	0258	91.45
								1114	44.16
								2400	26.17
							3-6	2400	1/ 12.76
									ACC. (inches)
									.7957
									.7981
									.7997
									.8088
									.8135
									.8278
									.8434
									.8712
									.8934
									.9166

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0000496. 1/ RUNOFF DECREASED TO 12.06 CFS AT 2400 ON 3-7-64, BEGINNING OF NEXT RUNOFF EVENT.



OXFORD, MISSISSIPPI WATERSHED W-32

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI AREA—75,000 ACRES (117.2 SQ. MILES)						WATERSHED W-34 ^{1/} (62.11)				
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ₂ / Q ₃ /	3.81 .86	3.05 .85	5.97 2.05	9.56 4.02	2.05 .53	1.57 .30	5.76 .83	5.99 1.05	5.69 1.05	1.94 .35	5.05 .91	8.53 4.41	58.97 17.21			
STA AV ₄ /P (57-64) Q	3.92 1.43	4.69 1.66	4.60 1.59	5.19 1.56	3.75 .95	3.75 .52	4.57 .63	3.60 .54	4.64 .86	2.12 .39	4.84 .98	5.12 1.71	50.79 12.82			
MEAN P ₅ / 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME		
1964	12-3	.13	12-3	.13	12-3	.26	12-3	.73	12-3	1.30	12-3	2.23	12-3	2.72	12-3	3.14
MAXIMUMS FOR PERIOD OF RECORD																
19 57 TO 19 64	2-23 1962	.14	2-23 1962	.14	2-23 1962	.27	2-23 1962	.78	2-23 1962	1.35	12-3 1964	2.23	12-3 1964	2.72	1-28 1957	3.28
NOTES: Watershed conditions: About 22% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 40% in pasture and idle land, good cover April to October with fair cover remainder of year; 35% in woods, good cover; 2% in bare gullies; 1% urban. Percentages of total area in various land use categories, as reported herein, are based on the latest survey partially completed in 1965. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1965. 1/ About 17% of area, principally in upper reaches, above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 32 rain gages. 3/ Monthly values of runoff include relatively insignificant flow through auxiliary station 34-A. 4/ Precipitation and runoff records began Jan. 1957. 5/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 DAILY PRECIPITATION (inches)						OXFORD, MISSISSIPPI WATERSHED W-34								62.11		
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.10	.02	.00	.00	.00	.00	.00			
2	.00	.00	.93	.00	.34	.00	.55	.02	.00	.19	.00	.00	.51			
3	.00	.00	.00	.88	.00	.00	.00	.00	.00	.00	.00	.00	4.52			
4	.00	.00	1.77	1.24	.00	.00	.00	.00	.00	.00	.00	.00	.02			
5	.07	.62	.00	.53	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	1.00	.07	.00	.01	.00	.20	.01	.00	.00	.00	.00	.00	.00			
7	.00	.00	.19	.02	.00	.00	.00	.00	.00	.00	.69	.00	.00			
8	1.14	.00	.02	.00	.00	.00	.10	.52	.00	.00	.00	.00	.00			
9	.03	.00	.87	.00	.38	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.34	.00	.00	.06	.00	.00	.00	.00	1.57			
11	.56	.00	.00	.42	.02	.38	2.46	.78	.00	.00	.00	.00	.75			
12	.06	.02	.00	.54	.60	.35	.92	.00	.00	.00	.08	.00	.00			
13	.00	.83	.00	.70	.00	.00	.00	.00	.00	.08	.00	.00	.00			
14	.00	.03	.53	.00	.00	.03	.00	.00	.00	.20	.00	.00	.00			
15	.00	.85	.00	.00	.00	.00	.20	3.61	.00	.13	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.10	.02	.00	.00	.00	.00	.00			
17	.00	.15	.00	.00	.00	.00	.00	.00	.69	.00	.95	.25	.00			
18	.00	.14	.00	.00	.00	.00	.00	.00	.00	.15	.69	.00	.00			
19	.26	.00	.15	.00	.00	.00	.02	.00	.00	.00	.92	.16	.00			
20	.00	.00	.07	.00	.00	.00	.05	.00	.06	.00	.00	.03	.00			
21	.00	.00	.00	.36	.00	.00	.29	.21	.00	.00	.00	.00	.00			
22	.00	.00	.00	.95	.00	.00	.00	.15	.00	.00	.00	.00	.00			
23	.00	.00	.00	2.09	.00	.08	.00	.00	.00	.00	.00	.00	.00			
24	.14	.00	.78	.02	.00	.00	.11	.00	.00	.00	.27	.48	.00			
25	.00	.00	.15	.14	.00	.00	.00	.42	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.61	.00	.00	.00	.18	.00	.00	.00	.00	.00			
27	.00	.18	.00	.05	.02	.01	.00	.00	2.73	.00	1.31	.00	.00			
28	.00	.165	.48	.00	.00	.00	.00	.00	2.15	1.19	.14	.00	.00			
29	.00	.00	.00	.00	.00	.24	.69	.00	.06	.00	.00	.00	.00			
30	.00	-----	.01	.00	.02	.28	.03	.00	.00	.00	.00	.24	.00			
31	.55	-----	.00	-----	.33	-----	.13	.00	-----	.00	-----	.00	.00			
TOTAL	3.81	3.05	5.97	9.56	2.05	1.57	5.76	5.99	5.69	1.94	5.05	8.53				
STA AV	3.92	4.69	4.60	5.19	3.75	3.75	4.57	3.60	4.64	2.12	4.84	5.12				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 1-31, AND 33. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-34 62.11	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	34.50	58.12	41.13	42.43	49.28	33.76	33.09	34.36	38.18	31.00	32.15	37.94		
2	34.50	39.16	509.57	44.03	41.71	32.40	82.60	33.08	39.61	37.13	32.16	37.01		
3	34.50	37.45	145.74	48.51	41.70	30.99	56.22	32.74	42.44	60.58	32.17	6172.21		
4	34.50	37.44	2551.44	1995.05	41.01	30.63	32.74	32.74	41.70	33.41	31.82	2366.04		
5	34.52	121.27	377.77	490.79	41.74	29.90	32.74	33.08	41.01	32.40	31.83	187.30		
6	265.52	118.41	50.46	387.19	41.72	28.63	33.07	34.46	39.69	31.72	31.84	96.96		
7	82.51	58.46	39.37	78.06	39.09	32.01	33.76	33.79	36.43	30.99	37.53	78.21		
8	553.88	44.11	54.18	49.95	37.89	28.09	34.44	66.09	35.37	30.26	38.54	75.17		
9	417.46	40.42	755.90	37.60	41.59	28.09	34.09	48.23	37.43	30.26	33.53	72.19		
10	40.07	39.71	315.26	34.94	50.82	28.09	33.74	36.15	37.43	30.26	33.53	238.39		
11	37.71	39.70	65.79	35.38	44.39	30.26	585.72	120.05	38.00	30.26	33.85	3125.32		
12	357.84	41.13	47.27	108.81	438.76	50.89	782.70	43.15	38.00	30.26	33.86	241.48		
13	64.86	244.23	38.09	1080.31	62.55	50.62	52.27	35.19	38.00	30.26	33.53	90.00		
14	39.10	84.20	71.98	120.32	43.90	29.53	41.69	35.58	40.38	30.99	33.19	51.21		
15	30.34	757.73	173.42	62.73	41.06	30.26	41.69	1514.74	41.01	31.72	33.51	42.58		
16	30.68	161.68	54.00	56.87	39.00	30.99	50.74	542.76	42.53	30.99	34.18	41.81		
17	32.49	75.44	39.35	55.86	38.44	31.72	31.00	57.55	49.02	30.26	152.21	45.83		
18	31.78	81.54	36.51	54.18	38.44	31.36	31.36	36.10	47.50	30.99	162.20	45.93		
19	34.79	83.35	42.07	104.31	39.63	31.36	32.07	34.19	39.82	30.99	566.87	39.90		
20	59.48	64.58	46.42	104.31	40.26	31.36	32.74	35.64	37.93	30.26	137.08	42.52		
21	43.75	56.01	47.27	51.55	39.07	31.70	33.07	38.89	38.50	30.26	42.07	41.83		
22	39.14	53.34	43.86	658.87	38.44	29.89	32.74	39.82	39.69	30.26	34.93	39.77		
23	39.75	48.16	38.50	3231.84	38.44	28.09	30.60	37.93	40.32	30.26	33.47	38.58		
24	41.06	45.58	41.54	621.63	39.07	28.44	30.60	36.99	48.47	29.89	34.19	143.34		
25	40.41	44.79	327.42	73.85	38.57	28.08	32.07	40.39	40.32	29.89	35.64	157.93		
26	39.71	44.79	87.38	1054.18	36.43	28.44	30.99	65.65	40.32	30.26	34.92	62.14		
27	37.07	48.97	51.63	1689.01	35.58	29.53	30.26	42.44	278.34	29.89	48.71	46.46		
28	34.16	50.70	180.32	156.37	36.02	29.89	29.17	41.01	1810.02	108.23	945.79	42.59		
29	34.50	44.44	96.50	80.45	34.64	30.62	147.03	39.69	139.85	47.21	56.24	41.81		
30	33.82	-----	53.44	59.66	32.41	33.45	97.76	40.38	35.85	34.60	39.83	91.65		
31	81.30	-----	44.78	-----	33.42	-----	36.02	41.01	-----	31.81	-----	71.62		
MEAN	87.63	91.89	208.66	422.30	53.39	31.64	84.48	106.53	110.44	35.11	95.38	448.51		
INCHES	.86	.85	2.05	4.02	.53	.30	.83	1.05	1.05	.35	.91	4.41		

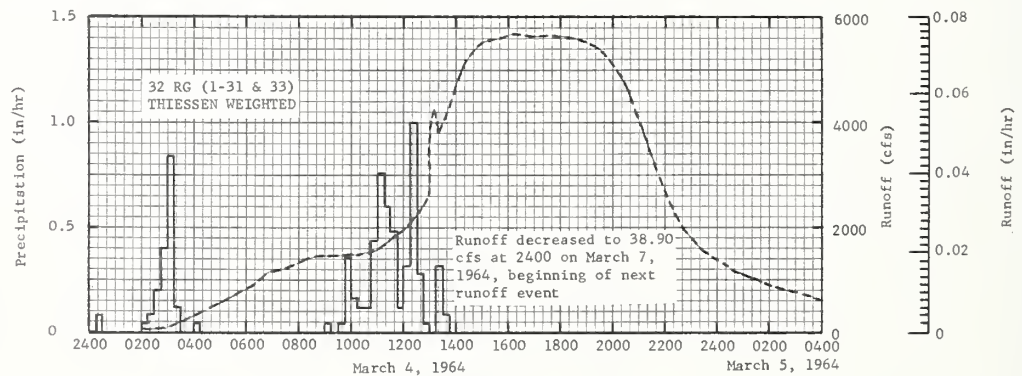
NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.00031736. QUALITY OF RECORDS: COOD, ESTIMATED TO BE WITHIN 10% OF ACTUAL. DAILY DISCHARGE VALUES INCLUDE RELATIVELY INSIGNIFICANT FLOW THROUGH AUXILIARY STATION 34-A.

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-34				62.11
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)	
Event of March 4-7, 1964 1/											
3-4	.00	2/.0019	3-4	32 RG	AVG 3/		3-4	0200	71.32	.0000	
				0015	.00	.00		0254	76.82	.0008	
				0030	.08	.02		0338	214.06	.0022	
				0200	.00	.02		0400	312.07	.0035	
				0215	.04	.03		0438	481.58	.0068	
				0230	.08	.05		0500	579.65	.0094	
				0245	.20	.10		0538	743.78	.0150	
				0300	.40	.20		0620	910.74	.0226	
				0315	.84	.41		0650	1139.43	.0294	
				0330	.12	.44		0700	1166.80	.0319	
				0400	.00	.44		0746	1294.05	.0444	
				0415	.04	.45		0800	1326.51	.0484	
				0900	.00	.45		0810	1349.21	.0514	
				0915	.04	.46		0850	1447.68	.0637	
				0930	.00	.46		1000	1471.44	.0862	
				0945	.04	.47		1020	1483.16	.0928	
				1000	.36	.56		1048	1545.00	.1021	
				1015	.16	.60		1140	1817.83	.1214	
				1030	.12	.63		1200	1986.00	.1297	
				1045	.12	.66		1220	2152.32	.1389	
				1100	.44	.77		1258	2616.73	.1588	
				1115	.76	.96		1310	4268.13	.1679	
				1130	.60	1.11		1320	3859.29	.1769	
				1145	.48	1.23		1348	4412.54	.2024	
				1200	.12	1.26		1400	4687.68	.2145	

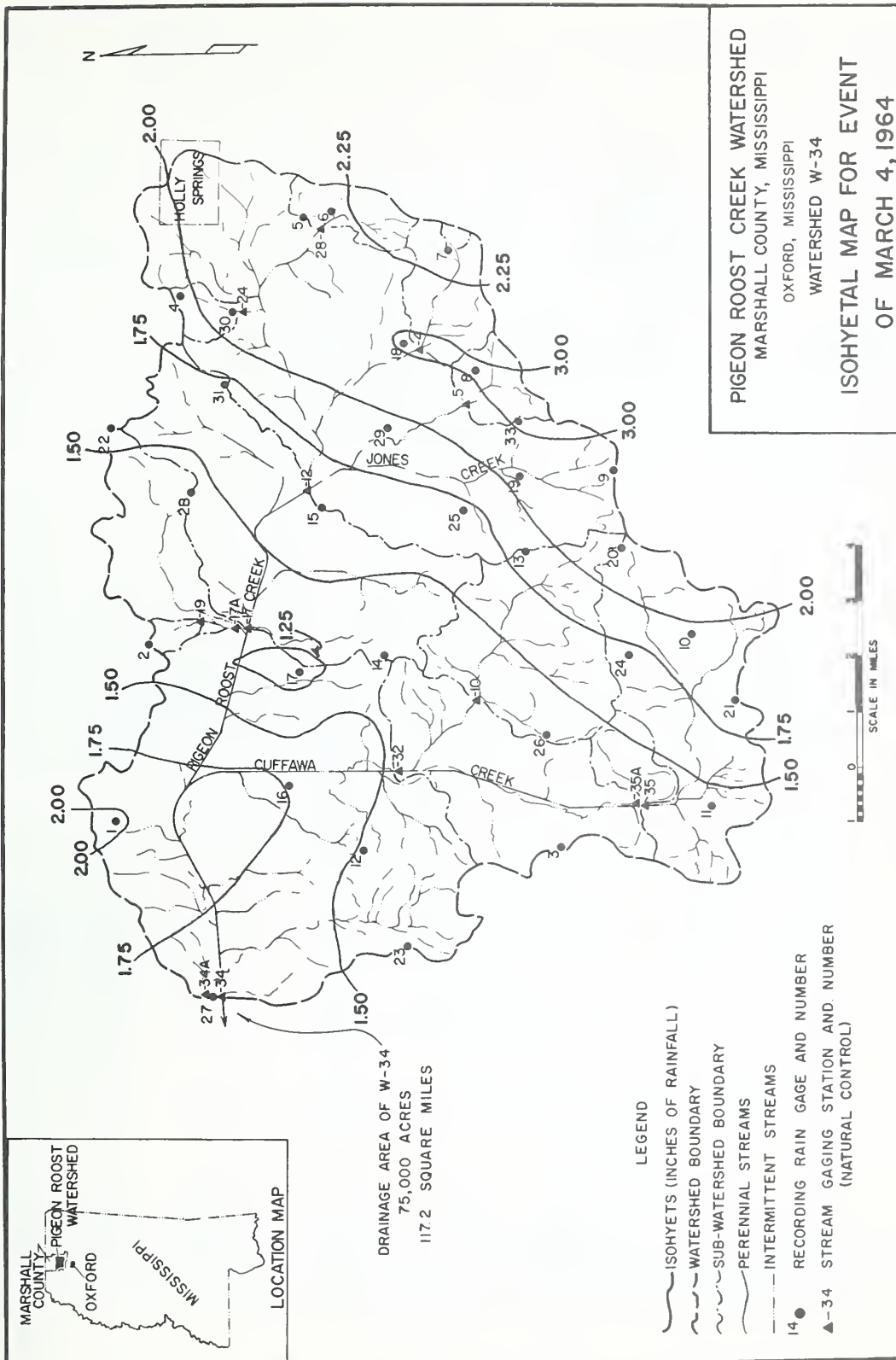
NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.00001322. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.11-4. 1/ ISOHYETAL MAP ON P. 62.11-4. 2/ RUNOFF PRIOR TO 0200 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ THIENSEN WEIGHTED RAINFALL, RAIN GAGES 1-31 and 33. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3.

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI			WATERSHED W-34			62.11
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	ACC. (inches)
Event of March 4-7, 1964 - Continued									
				1215	.32	1.34		1420	5144.60
				1230	1.00	1.59		1500	5535.77
				1245	.28	1.66		1530	5599.21
				1300	.04	1.67		1610	5681.12
				1315	.00	1.67		1700	5644.71
				1330	.32	1.75		1814	5605.16
				1345	.08	1.77		1926	5437.34
								2000	5090.20
								2020	4883.89
								2054	4195.75
			TOTALS	EACH	RAIN	GAGE			
			RG 1	2.01	RG 17	1.17		2200	2728.48
			RG 2	1.37	RG 18	3.07		2210	2504.07
			RG 3	1.49	RG 19	2.10		2258	1814.38
			RG 4	1.90	RG 20	2.27		2400	1387.78
			RG 5	2.28	RG 21	1.92	3-5	0152	956.93
			RG 6	2.31	RG 22	1.53		0200	929.34
			RG 7	2.00	RG 23	1.45		0226	842.01
			RG 8	3.08	RG 24	1.67		0250	796.20
			RG 9	2.95	RG 25	1.65		0326	716.98
			RG 10	1.95	RG 26	1.38		0352	657.73
			RG 11	1.40	RG 27	1.59		0400	650.30
			RG 12	1.48	RG 28	1.42		0436	621.85
			RG 13	1.86	RG 29	1.75		0600	548.02
			RG 14	1.31	RG 30	2.23		0730	472.42
			RG 15	1.75	RG 31	1.67		1000	325.28
			RG 16	1.76	RG 33	3.21		1030	296.13
								1326	210.73
								1600	154.85
								1630	144.03
								2010	104.29
							3-6	2400	73.51
								0600	52.54
								1200	43.87
								1204	43.78
								1758	48.47
							3-7	2400	40.55
								2000	38.45
								2400	1/ 38.90

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0001322. 1/ BEGINNING OF NEXT EVENT



OXFORD, MISSISSIPPI WATERSHED W-34



MONTHLY PRECIPITATION AND RUNOFF (inches)							OXFORD, MISSISSIPPI				WATERSHED W-35 ^{1/} 62.12					
							AREA~7,550 ACRES (11.8 SQ. MILES)									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ^{2/}	3.55	3.04	6.44	8.75	2.00	1.65	7.67	6.81	6.48	2.23	4.96	7.88	61.46		
	Q	.72	.42	2.54	3.80	.03	.01	1.08	1.53	1.18	.06	.68	4.58	16.63		
STA AV ^{3/} (57-64)	P	3.83	4.72	4.68	5.24	4.24	3.62	4.65	3.14	5.22	2.08	4.89	5.07	51.38		
	Q	1.48	1.67	1.45	1.46	.89	.17	.28	.23	.62	.05	.70	1.57	10.57		
MEAN P ^{4/} 45 YR		5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-4	.40	3-4	.38	3-4	.72	12-3	1.67	12-3	2.14	12-3	3.09	12-2	3.33	11-27	3.90
MAXIMUMS FOR PERIOD OF RECORD																
1957 TO	5-26	.88	5-26	.84	5-26	1.48	2-23	2.19	2-23	2.43	12-3	3.09	1-30	3.46	1-27	4.46
1964	1963		1963		1963		1962		1962		1964		1957		1957	
NOTES: Watershed conditions: About 27% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 47% in pasture and idle land, good cover April to October with fair cover remainder of year; 24% in woods, good cover; 2% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1964. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1964. 1/ About 12% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 5 rain gages. 3/ Precipitation and runoff records began Jan. 1957. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 DAILY PRECIPITATION (inches)							OXFORD, MISSISSIPPI							WATERSHED W-35 62.12		
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
2	.00	.00	1.05	.00	.36	.00	1.24	.01	.00	.55	.00	.00	1.02			
3	.00	.00	.00	.51	.00	.00	.00	.00	.00	.00	.00	.00	3.78			
4	.00	.00	1.75	1.12	.00	.00	.00	.00	.00	.00	.00	.00	.01			
5	.09	.56	.00	.57	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	1.00	.08	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00			
7	.00	.00	.28	.04	.00	.00	.00	.00	.00	.00	.68	.00	.00			
8	1.10	.00	.01	.00	.00	.00	.12	.49	.00	.00	.00	.00	.00			
9	.02	.00	.71	.00	.85	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.24	.00	.00	.06	.00	.00	.00	.00	1.58			
11	.58	.00	.00	.48	.00	.30	2.84	1.29	.00	.00	.00	.00	.73			
12	.06	.04	.00	.74	.24	.60	.60	.00	.00	.00	.11	.00	.00			
13	.00	.82	.00	.53	.00	.00	.00	.00	.00	.02	.00	.00	.00			
14	.00	.04	.98	.00	.00	.01	.00	.00	.00	.13	.00	.00	.00			
15	.00	.84	.00	.00	.00	.00	.33	4.09	.00	.14	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.15	.04	.00	.00	.00	.00	.00			
17	.00	.14	.00	.00	.00	.00	.00	.00	.67	.00	.70	.32	.00			
18	.00	.17	.00	.00	.00	.00	.00	.00	.00	.09	.69	.00	.00			
19	.03	.00	.16	.00	.00	.00	.02	.00	.00	.00	.83	.12	.00			
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00			
21	.00	.00	.00	.35	.00	.00	.43	.31	.00	.00	.00	.00	.00			
22	.00	.00	.00	.95	.00	.01	.00	.18	.00	.00	.00	.00	.00			
23	.00	.00	.00	1.66	.00	.13	.00	.00	.00	.00	.00	.00	.00			
24	.10	.00	.65	.00	.00	.00	.01	.00	.00	.00	.27	.30	.00			
25	.00	.00	.20	.11	.01	.00	.00	.18	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.66	.00	.00	.01	.16	.00	.00	.00	.00	.00			
27	.00	.22	.00	.03	.01	.03	.00	.00	3.38	.00	1.53	.00	.00			
28	.00	.13	.63	.00	.00	.00	.00	.00	2.36	1.30	.15	.00	.00			
29	.00	.00	.00	.00	.00	.28	1.91	.00	.07	.00	.00	.00	.00			
30	.00	-----	.00	.00	.01	.22	.01	.00	.00	.00	.00	.01	.00			
31	.57	-----	.00	-----	.28	-----	.00	.00	-----	.00	-----	.00	.00			
TOTAL	3.55	3.04	6.44	8.75	2.00	1.65	7.67	6.81	6.48	2.23	4.96	7.88				
STA AV	3.83	4.72	4.68	5.24	4.24	3.62	4.65	3.14	5.22	2.08	4.89	5.07				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 10, 11, 20, 21, AND 24. STATION AVERAGE IS FOR 8-YR (1957-64) RECORD PERIOD.																

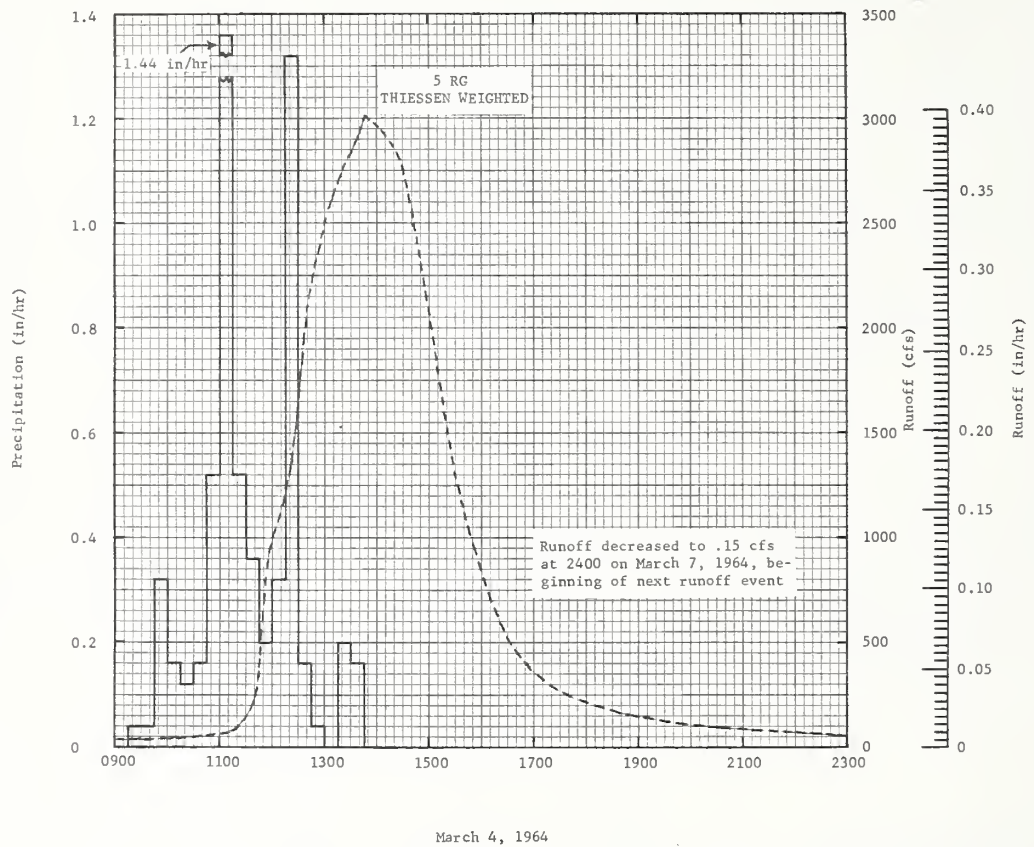
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-35 62.12	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	89.59	.00	.00	.00	16.28	.00	.00	12.41	.00	.00	.06
3	.00	.00	8.22	.07	.00	.00	.19	.00	.00	.00	.00	.00	957.66
4	.00	.00	443.87	163.49	.00	.00	.00	.00	.00	.00	.00	.00	99.88
5	.00	6.23	11.62	71.51	.00	.00	.00	.00	.00	.00	.00	.00	1.34
6	32.86	1.33	.78	21.04	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	5.52	.21	.38	1.22	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	110.19	.04	2.68	.00	.00	.00	.00	1.02	.00	.00	.00	.00	.00
9	41.02	.00	70.71	.00	4.13	.00	.00	.00	.00	.00	.00	.00	.00
10	1.36	.00	17.51	.00	.00	.00	.00	.00	.00	.00	.00	.00	39.31
11	2.67	.00	3.65	1.39	.00	4.12	94.80	41.46	.00	.00	.00	.00	346.99
12	33.05	.00	3.96	45.84	4.54	.22	82.55	.06	.00	.00	.00	.00	8.72
13	.27	21.85	3.81	101.70	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	1.48	71.13	4.36	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	94.59	22.16	.41	.00	.00	2.99	386.31	.00	.00	.00	.00	.00
16	.00	5.06	1.10	.00	.00	.00	.15	57.75	.00	.00	.00	.00	.00
17	.00	.80	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.57	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.55	.00
19	.00	.83	.00	.00	.00	.00	.00	.00	.00	.00	.00	34.16	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00
21	.00	.00	.00	.00	.00	.00	.50	.22	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00
23	.00	.00	.00	335.64	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.29	21.45	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	24.21	3.70	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	1.56	287.83	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	74.71	.00	.00	.00	.00	129.15	.00	.00	68.27	.00
28	.00	.00	28.98	2.24	.00	.00	.00	.00	246.19	5.80	109.26	.00	.00
29	.00	.00	.41	.00	.00	.00	145.78	.00	.41	.00	.02	.00	.00
30	.00	-----	.00	.00	.00	.00	.38	.00	.00	.00	.00	.00	.00
31	.55	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00	.00
MEAN	7.34	4.58	26.02	40.18	.28	.14	11.08	15.70	12.52	.59	7.14	46.90	
INCHES	.72	.42	2.54	3.80	.03	.01	1.08	1.53	1.18	.06	.68	4.58	

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0031526. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1964			SELECTED RUNOFF EVENT				OXFORD, MISSISSIPPI				WATERSHED W-35				62.12	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of March 4-7, 1964 1/																
3-4	2/ .24	3/ .0384	3-4	5 RG	AVG 4/		3-4	0900	31.84	.0000						
				0915	.00	.00		1112	70.12	.0147						
				0930	.04	.01		1142	282.12	.0263						
				0945	.04	.02		1156	911.84	.0446						
				1000	.32	.10		1222	1364.37	.1094						
				1015	.16	.14		1236	1926.00	.1598						
				1030	.12	.17		1306	2583.00	.3078						
				1045	.16	.21		1328	2820.00	.4380						
				1100	.52	.34		1348	3009.95	.5656						
				1115	1.44	.70		1430	2769.68	.8313						
				1130	.52	.83		1518	1560.00	1.0588						
				1145	.36	.92		1554	923.97	1.1567						
				1200	.20	.97		1644	442.63	1.2315						
				1215	.32	1.05		1718	298.00	1.2590						
				1230	1.32	1.38		1746	240.36	1.2755						
				1245	.16	1.42		1820	178.78	1.2911						
				1300	.04	1.43		2034	94.60	1.3312						
				1315	.00	1.43		2202	68.69	1.3470						
				1330	.20	1.48		2400	38.60	1.3608						
				1345	.16	1.52		3-5	0258	23.11	1.3728					
								1156	7.41	1.3908						
								2400	.95	1.3974						
								2400	.60	1.3999						
							3-7	2400	5/.15	1.4011						

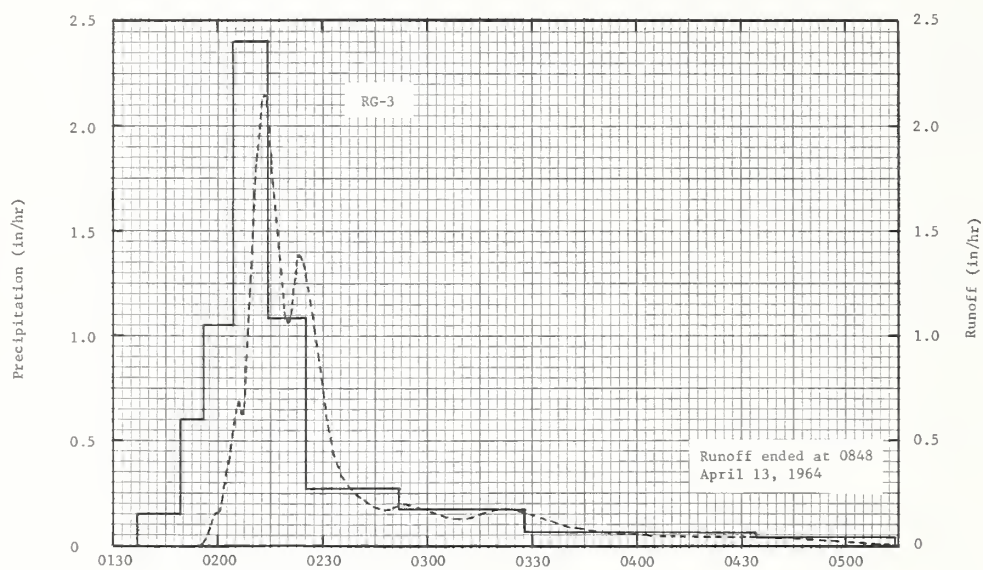
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 0.0001314. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.12-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 10, 11, 20, 21 AND 24) PRIOR TO 0915 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0900 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3. 5/ BEGINNING OF NEXT RUNOFF EVENT.



OXFORD, MISSISSIPPI WATERSHED W-35

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED WC-1 AREA—3.88 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ₁ / Q	3.88 .90	3.36 1.08	6.07 2.74	10.19 4.46	2.53 .12	1.18 .00	4.62 1.26	7.26 1.91	5.40 1.39	2.29 .34	4.32 1.25	9.95 4.61	61.05 20.06			
STA AV ₂ / (58-64)Q	3.47 1.40	4.39 1.75	5.04 2.11	5.00 1.28	4.11 1.13	3.89 .99	4.37 .87	4.49 1.18	3.51 .82	2.14 .43	4.11 1.01	5.18 2.02	49.70 14.99			
MEAN P ₃ / 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-4	3.61	3-4	1.06	3-4	1.62	3-4	1.84	12-3	1.97	12-3	2.93	12-3	2.94	12-3	3.93
MAXIMUMS FOR PERIOD OF RECORD																
19 58 to 19 64	6-10 1961	7.34	6-10 1961	1.94	6-10 1961	1.98	1-22 1962	2.45	1-22 1962	2.71	12-3 1964	2.93	12-3 1964	2.94	12-9 1961	4.26
NOTES: Watershed conditions: 100% of area cultivated in corn, low plant population, low crop yields, poor winter cover provided by crop residue. Row direction ranges from approximate contour to up and down hill. 1/ Precipitation data from rain gage 3. 2/ Precipitation and runoff records began Jan. 1958. 3/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI WATERSHED WC-1										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG 3		4-13	RG	3		4-13									
3-14	.29	.000		0137	.00	.00		0153	.000	.000						
3-19	.15	.000		0149	.15	.03		0156	.006	.000						
3-20	.12	.000		0156	.60	.10		0159	.152	.004						
3-24	.79	.183		0204	1.05	.24		0201	.175	.009						
3-25	.16	.040		0214	2.40	.64		0206	.687	.045						
3-28	.24	.000		0225	1.09	.84		0207	.628	.056						
4-3	.68	.182		0252	.27	.94		0211	1.735	.135						
4-4	1.48	.598		0328	.17	1.04		0213	2.148	.199						
4-5	.55	.325		0434	.06	1.11		0216	1.720	.296						
4-11	.42	.000		0514	.04	1.14		0220	1.064	.389						
4-12	.57	.121						0223	1.390	.450						
								0225	1.293	.495						
								0229	.870	.567						
								0232	.564	.603						
								0236	.317	.632						
								0246	.177	.674						
								0250	.175	.685						
								0253	.199	.695						
								0254	.195	.698						
								0307	.134	.734						
								0313	.139	.747						
								0317	.157	.757						
								0323	.171	.774						
								0328	.152	.787						
								0341	.082	.812						
								0355	.060	.829						
								0406	.042	.838						
								0439	.042	.861						
								0505	.011	.873						
								0556	.004	.879						
								0635	.002	.881						
								0848	.000	.884						
Watershed conditions: Essentially undisturbed since corn was harvested in fall, 1963. Estimated 50 to 60% ground cover provided by crop residue consisting of corn stalks (standing) and native grasses. Row direction ranged from approximate contour to up and down hill.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3.912. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.16-4.																

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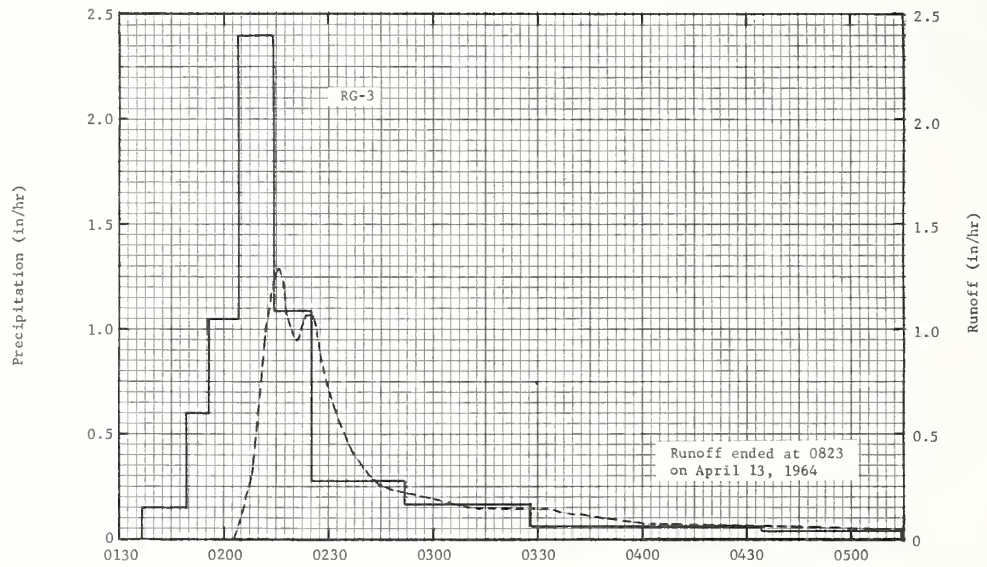


April 13, 1964

OXFORD, MISSISSIPPI WATERSHED WC-1

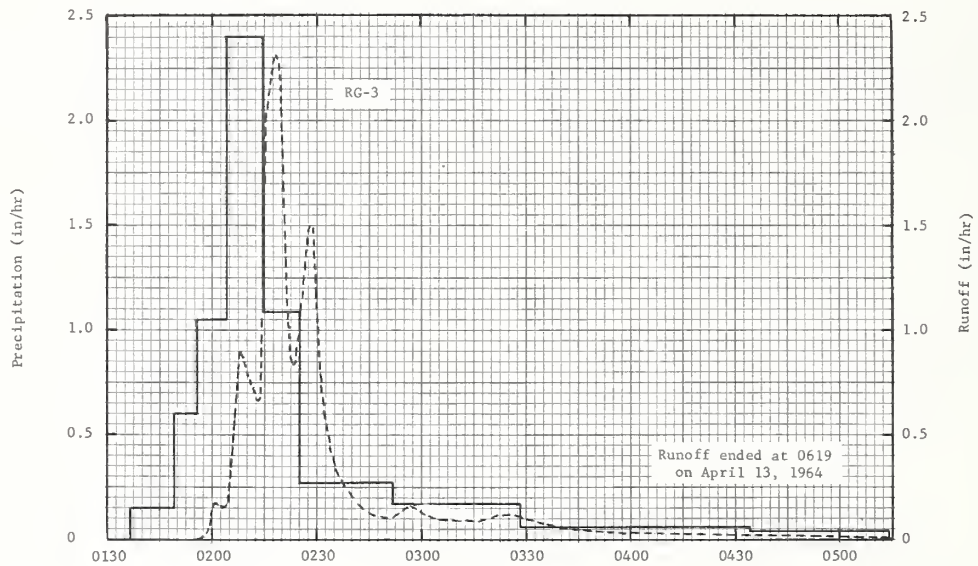
MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI WATERSHED WC-2 AREA—1.45 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ¹ / Q	3.88 .62	3.36 .86	6.07 2.32	10.19 4.35	2.53 .15	1.18 .00	4.62 .91	7.26 1.15	5.40 .88	2.29 .05	4.32 1.36	9.95 6.82	61.05 19.47			
STA AV ² /P (58-64) Q	3.47	4.39	5.04	5.00	4.11	3.89	4.37	4.49	3.51	2.14	4.11	5.18	49.70			
(58-64) Q	1.51	1.79	2.05	1.20	.90	.76	.59	.66	.54	.22	.74	2.12	13.08			
MEAN P ³ / 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	3-4	3.01	4-23	.88	3-4	1.38	12-3	2.34	12-3	3.01	12-3	4.40	12-3	4.50	12-3	5.26
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 19 64	6-10 1961	4.81	1-22 1962	1.29	2-23 1962	1.76	1-22 1962	2.37	12-3 1964	3.01	12-3 1964	4.40	12-3 1964	4.50	12-3 1964	5.26
NOTES: Watershed conditions: 100% of area cultivated in corn, high plant population, high crop yields, fair winter cover provided by crop residue. Terraced with rows on 0.2 to 0.4% slope. 1/ Precipitation data from rain gage 3. 2/ Precipitation records began Jan. 1958, runoff records began July 1958. 3/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss.																
1964 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI WATERSHED WC-2										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 13, 1964																
	RG 3		4-13	RG	3		4-13									
3-14	.29	.000		0137	.00	.00		0203	.000	.000						
3-19	.15	.000		0149	.15	.03		0208	.318	.013						
3-20	.12	.000		0156	.60	.10		0212	.985	.056						
3-24	.79	.047		0204	1.05	.24		0214	1.229	.093						
3-25	.16	.043		0214	2.40	.64		0216	1.286	.135						
3-28	.24	.000		0225	1.09	.84		0218	1.049	.174						
4-3	.68	.043		0252	.27	.94		0221	.947	.224						
4-4	1.48	.797		0328	.17	1.04		0223	1.059	.257						
4-5	.55	.310		0434	.06	1.11		0226	1.074	.311						
4-11	.42	.000		0514	.04	1.14		0232	.622	.395						
4-12	.57	.046						0237	.407	.438						
								0245	.254	.482						
								0255	.211	.521						
								0313	.144	.574						
								0333	.144	.622						
								0402	.068	.673						
								0443	.058	.716						
								0536	.031	.756						
								0823	.000	.799						
Watershed conditions: Essentially undisturbed since corn was harvested in fall, 1963. Estimated 60 to 80% ground cover provided by crop residue consisting of corn stalks (shredded) and native grasses. Terraced with rows on 0.2 to 0.4% slope.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 1.462. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.16-4.																

Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station



April 13, 1964

OXFORD, MISSISSIPPI WATERSHED WC-2



April 13, 1964

OXFORD, MISSISSIPPI WATERSHED WC-3

MONTHLY PRECIPITATION AND RUNOFF (inches)						OXFORD, MISSISSIPPI AREA—3,200 ACRES (5.00 SQ. MILES)								WATERSHED W-17A ^{1/} 62.17		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ₂ / Q	3.62 .13	2.84 .21	4.97 1.57	9.93 3.55	2.13 .12	1.05 .07	5.44 .47	5.28 .40	5.36 .59	1.88 .01	4.54 .22	8.70 3.77	55.74 11.11			
STA AV ₃ /P (58-64) Q	3.44 .75	4.31 1.14	4.70 1.06	5.18 .95	3.21 .24	3.27 .09	4.72 .20	4.24 .21	3.96 .54	1.94 .08	3.82 .10	5.11 .93	47.90 6.29			
MEAN P ₄ / 45 YR	5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
1964	4-23	.33	12-3	.31	12-3	.62	12-3	1.59	12-3	2.06	12-3	2.77	12-3	2.95	12-3	3.16
MAXIMUMS FOR PERIOD OF RECORD 5/																
1961 TO 1964	2-23 1962	.42	2-23 1962	.42	2-23 1962	.84	2-23 1962	2.20	2-23 1962	3.18	2-23 1962	3.33	2-23 1962	3.34	2-23 1962	4.15
NOTES: Watershed conditions: About 15% of area in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 22% in pasture and idle land, good cover April to October with fair cover remainder of year; 62% in woods, good cover; 1% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1965. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1965. 1/ About 25% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from rain gages 2, 17, 22, and 28. 3/ Precipitation and runoff records began Jan. 1957. Runoff for 1957 was estimated, therefore was not included in the station averages. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss. 5/ Maximum discharges and volumes were not computed prior to 1961; poor records 1958-60.																
MONTHLY PRECIPITATION AND RUNOFF (inches): (Revised) Changed values <u>underlined</u> .																
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1958 P Q	2.52 .12	1.69 .05	3.13 .13	6.80 1.73	4.62 .95	6.79 .47	6.02 .32	1.90 .01	11.68 <u>2.78</u>	.88 .00	3.02 .05	1.74 .02	50.79 <u>6.63</u>			
1960 P Q	4.58 .40	3.84 .77	5.05 1.65	<u>3.01</u> .15	3.57 .54	3.64 .02	2.84 .08	4.31 .03	2.31 .01	3.92 .10	2.75 .02	4.10 .11	<u>43.92</u> 3.88			
1964 DAILY PRECIPITATION (inches) OXFORD, MISSISSIPPI WATERSHED W-17A 62.17																
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00			
2	.00	.00	.81	.00	.25	.00	.31	.00	.00	.08	.00	.00	.27			
3	.00	.00	.00	1.04	.00	.00	.00	.00	.00	.00	.00	.00	5.02			
4	.00	.00	1.41	1.40	.00	.00	.00	.00	.00	.00	.00	.00	.01			
5	.05	.58	.00	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00			
6	1.01	.06	.00	.00	.00	.35	.00	.00	.00	.00	.00	.00	.00			
7	.00	.00	.13	.00	.00	.00	.00	.00	.00	.00	.00	.63	.00			
8	1.05	.00	.04	.00	.00	.00	.10	.48	.00	.00	.00	.00	.00			
9	.05	.00	.86	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00			
10	.00	.00	.02	.00	.36	.00	.00	.00	.00	.00	.00	.00	1.45			
11	.51	.00	.00	.40	.03	.17	2.19	.84	.00	.00	.00	.00	.74			
12	.06	.00	.00	.42	.97	.00	1.72	.00	.00	.00	.00	.02	.00			
13	.00	.76	.00	.84	.00	.00	.00	.00	.00	.07	.00	.00	.00			
14	.00	.02	.25	.00	.00	.08	.00	.00	.00	.21	.00	.00	.00			
15	.00	.80	.00	.00	.00	.00	.01	2.99	.00	.13	.00	.00	.00			
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
17	.00	.14	.00	.00	.00	.00	.00	.00	.60	.00	.63	.19	.00			
18	.00	.12	.00	.00	.00	.00	.00	.00	.00	.21	.76	.00	.00			
19	.31	.00	.12	.00	.00	.00	.03	.00	.00	.00	.97	.12	.00			
20	.00	.00	.16	.00	.00	.00	.09	.00	.00	.00	.00	.07	.00			
21	.00	.00	.00	.37	.00	.00	.04	.15	.00	.00	.00	.00	.00			
22	.00	.00	.00	.95	.00	.00	.00	.07	.00	.00	.00	.00	.00			
23	.00	.00	.00	2.31	.00	.00	.00	.00	.00	.00	.00	.00	.00			
24	.08	.00	.77	.06	.00	.00	.04	.00	.00	.00	.26	.59	.00			
25	.00	.00	.09	.18	.00	.00	.00	.50	.00	.00	.00	.00	.00			
26	.00	.00	.00	1.45	.00	.00	.00	.18	.00	.00	.00	.00	.00			
27	.00	.16	.00	.06	.03	.00	.00	.00	2.55	.00	1.15	.00	.00			
28	.00	.205	.31	.00	.00	.00	.00	.00	2.11	1.18	.12	.00	.00			
29	.00	.00	.00	.00	.00	.24	.73	.00	.10	.00	.00	.03	.00			
30	.00	-----	.00	.00	.01	.21	.02	.00	.00	.00	.00	.21	.00			
31	.50	-----	.00	-----	.33	-----	.16	.00	-----	.00	-----	.00	.00			
TOTAL	3.62	2.84	4.97	9.93	2.13	1.05	5.44	5.28	5.36	1.88	4.54	8.70				
STAAV	3.44	4.31	4.70	5.18	3.21	3.27	4.72	4.24	3.96	1.94	3.82	5.11				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 2, 17, 22, AND 28. STATION AVERAGE IS FOR 7-YR (1958-64) RECORD PERIOD.																

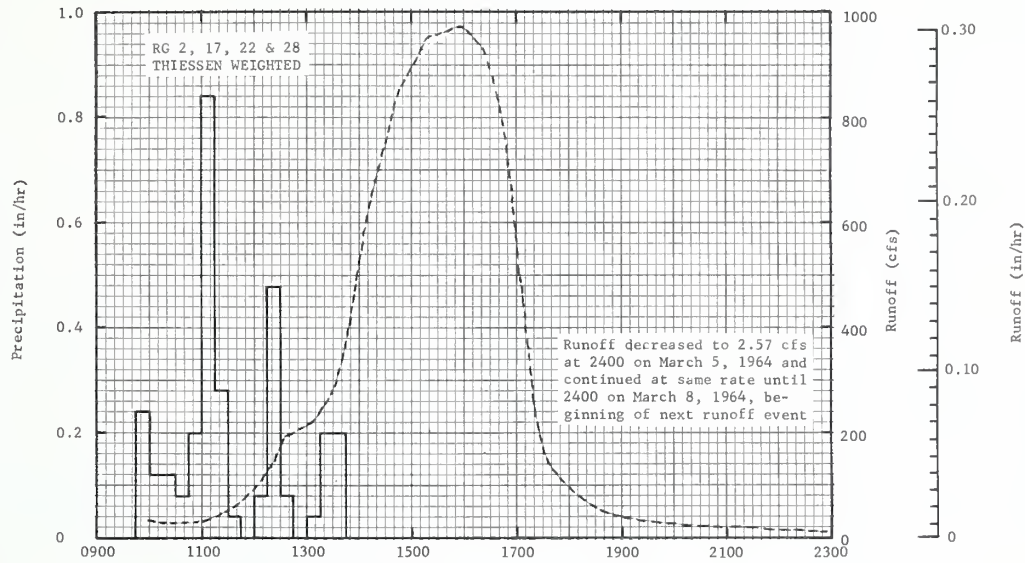
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI						WATERSHED W-17A 62.17	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.24	.23	.10	.48	.09	.10	.10	.24	.08	.00	.09	
2	.00	.26	6.39	.09	.38	.10	.10	.10	.24	.07	.00	.09	
3	.00	.26	.28	.13	.38	.10	.10	.10	.24	.06	.00	348.04	
4	.00	.26	164.12	99.90	.40	.09	.10	.10	.24	.03	.00	48.71	
5	.00	.21	4.09	9.50	.38	.06	.10	.10	.24	.00	.00	.97	
6	.09	.18	2.57	5.85	.36	.27	.10	.10	.24	.00	.00	.16	
7	.00	.19	2.57	1.11	.36	.50	.10	.12	.24	.00	.00	.05	
8	10.38	.22	2.57	.66	.38	.45	.10	.24	.24	.00	.00	.00	
9	1.26	.26	18.58	.34	.38	.40	.10	.23	.24	.00	.00	.00	
10	.36	.26	2.97	.26	.36	.45	.10	.24	.24	.00	.03	1.05	
11	.60	.26	.38	.32	.38	.47	6.67	.38	.24	.00	.06	101.52	
12	.58	.26	.43	.70	10.55	.50	53.43	.09	.24	.00	.06	2.32	
13	.28	1.26	.36	27.03	.14	.55	.14	.08	.24	.00	.06	.44	
14	.24	.31	.41	1.88	.10	.53	.12	.05	.24	.00	.06	.06	
15	.19	19.39	.50	1.04	.10	.47	.12	47.99	.24	.00	.06	.00	
16	.18	2.13	.50	.50	.12	.45	.11	.40	.24	.00	.06	.03	
17	.19	.28	.47	.43	.12	.43	.10	.22	.24	.00	.10	.03	
18	.18	.24	.45	.45	.12	.40	.10	.24	.24	.00	.56	.00	
19	.23	.22	.45	.45	.12	.45	.10	.24	.22	.00	11.46	.04	
20	.26	.24	.47	.38	.14	.50	.10	.24	.21	.00	.46	.08	
21	.26	.22	.50	.42	.15	.53	.10	.24	.21	.00	.00	.04	
22	.26	.21	.45	14.22	.14	.33	.10	.24	.21	.00	.00	.05	
23	.24	.19	.28	196.02	.11	.10	.10	.24	.21	.00	.00	.05	
24	.26	.19	.17	10.94	.10	.10	.10	.24	.21	.00	.00	2.62	
25	.30	.19	.63	6.25	.11	.10	.10	.24	.21	.00	.00	.41	
26	.28	.23	.16	76.88	.11	.10	.10	.24	.21	.00	.07	.03	
27	.30	.26	.13	19.00	.10	.10	.10	.24	14.14	.03	2.85	.00	
28	.28	.22	.11	1.42	.10	.10	.10	.24	57.91	1.63	14.06	.00	
29	.22	.19	.14	.55	.10	.10	.10	.24	.60	.03	.12	.00	
30	.28	-----	.11	.53	.09	.10	.10	.24	.19	.00	.09	.01	
31	.26	-----	.11	-----	.09	-----	.10	.24	-----	.00	-----	.03	
MEAN	.57	.99	6.82	15.91	.54	.29	2.03	1.74	2.63	.06	1.00	16.35	
INCHES	.13	.21	1.57	3.55	.12	.07	.47	.40	.59	.01	.22	3.77	

NOTES: TO CONVERT DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0074380. QUALITY OF RECORDS: POOR, ESTIMATED TO BE WITHIN 20% OF ACTUAL.

1964 SELECTED RUNOFF EVENT						OXFORD, MISSISSIPPI						WATERSHED W-17A 62.17	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)			
Event of March 4-5, 1964 1/													
3-4	2/ .67	3/.1107	3-4	4 RG	AVG 4/		3-4	0958	36.31	.0000			
				0945	.00	.00		1056	35.23	.0107			
				1000	.24	.06		1140	62.25	.0218			
				1015	.12	.09		1222	147.00	.0445			
				1030	.12	.12		1234	197.00	.0551			
				1045	.08	.14		1304	219.00	.0874			
				1100	.20	.19		1332	295.00	.1245			
				1115	.84	.40		1404	582.00	.1970			
				1130	.28	.47		1432	776.56	.2953			
				1145	.04	.48		1446	854.90	.3542			
				1200	.00	.48		1518	949.40	.5034			
				1215	.08	.50		1556	976.48	.6924			
				1230	.48	.62		1622	930.50	.8204			
				1245	.08	.64		1650	720.00	.9398			
				1300	.00	.64		1736	141.00	1.0420			
				1315	.04	.65		1838	50.89	1.0728			
				1330	.20	.70		2020	23.82	1.0924			
				1345	.20	.75		2234	13.00	1.1052			
								2400	7.18	1.1097			
							3-5	0316	5.39	1.1160			
								1328	3.52	1.1301			
								2400	5/ 2.57	1.1401			

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0003099. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 62.5-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 2, 17, 22 AND 28) PRIOR TO 0945 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0958 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3. 5/ RUNOFF CONTINUED AT 2.57 CFS UNTIL 2400 ON 3-8-64, BEGINNING OF NEXT RUNOFF EVENT.



March 4, 1964

OXFORD, MISSISSIPPI WATERSHED W-17A

MONTHLY PRECIPITATION AND RUNOFF (inches)							OXFORD, MISSISSIPPI				WATERSHED W-35A ^{1/} AREA—1,090 ACRES (1.70 SQ. MILES)				62.18	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ^{2/}	3.84	3.05	6.12	8.52	2.22	1.85	6.35	6.69	6.09	1.81	5.21	7.97	59.72		
	Q	1.08	.88	2.35	3.87	.14	.00	.60	1.23	1.36	.05	1.20	4.68	17.44		
STA AV ^{3/} P		3.30	4.41	4.95	4.94	3.69	3.23	4.91	3.24	4.51	1.85	4.25	5.10	48.38		
(58-64) Q		1.10	1.53	1.83	1.38	.73	.18	.33	.28	.52	.07	.45	1.58	9.98		
MEAN P ^{4/}		5.83	5.21	5.88	5.16	4.53	3.89	4.34	3.21	3.50	2.88	4.67	5.11	54.21		
45 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-23	.50	4-23	.47	4-23	.74	12-3	1.61	12-3	2.04	12-3	2.92	12-2	3.15	11-27	3.97
MAXIMUMS FOR PERIOD OF RECORD ^{5/}																
19 61 TO	2-23	.59	2-23	.58	2-23	1.11	2-23	1.76	12-3	2.04	12-3	2.92	12-2	3.15	11-27	3.97
19 64	1962		1962		1962		1962		1964		1964		1964		1964	
NOTES: Watershed conditions: About 19% in cultivation (cotton and corn), fair cover November to March, poor cover April and May improving to good by mid-July; 58% in pasture and idle land, good cover April to October with fair cover remainder of year; 22% in woods, good cover; 1% in bare gullies. Percentages of total area in various land use categories, as reported herein, are based on the latest survey completed in 1964. They differ significantly from those previously reported. Changes occurred over a period of 5 years prior to 1964. 1/ About 9% of drainage area above small desilting and retention dams. 2/ Monthly precipitation Thiessen weighted from 4 rain gages. 3/ Precipitation and runoff records began Jan. 1957. Runoff for 1957 was estimated, therefore was not included in the station averages. 4/ Mean P based on 45-yr (1920-64) U. S. Weather Bureau record period at Holly Springs 2N, Miss. 5/ Maximum discharges and volumes were not computed prior to 1961 - poor records 1957-60.																
MONTHLY PRECIPITATION AND RUNOFF (inches): (Revised) Changed values <u>underlined</u> .																
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1960	P	4.58	3.19	5.74	2.76	3.09	2.64	<u>1.52</u>	<u>2.88</u>	<u>2.65</u>	4.79	2.52	4.20	<u>40.56</u>		
	O	1.52	.89	2.85	.22	.63	.07	.00	.00	.00	.34	.02	.29	6.83		
1964 DAILY PRECIPITATION (inches)																
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
1	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00	.00			
2	.00	.00	1.03	.00	.33	.00	.50	.01	.00	.23	.00	.00	.00	.79		
3	.00	.00	.00	.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.08		
4	.00	.00	1.44	1.11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
5	.08	.62	.00	.55	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
6	1.00	.08	.00	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.00		
7	.00	.00	.28	.00	.00	.00	.00	.00	.00	.00	.00	.69	.00	.00		
8	1.14	.00	.02	.00	.00	.00	.10	.72	.00	.00	.00	.00	.00	.00		
9	.02	.00	.75	.00	.66	.00	.00	.00	.00	.00	.00	.00	.00	.00		
10	.00	.00	.01	.00	.24	.00	.00	.09	.00	.00	.00	.00	.00	1.53		
11	.60	.00	.00	.47	.00	.55	2.56	1.15	.00	.00	.00	.00	.75	.00		
12	.06	.02	.00	.63	.66	.53	.48	.00	.00	.00	.12	.00	.00	.00		
13	.00	.85	.00	.48	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
14	.00	.04	.91	.00	.00	.01	.00	.00	.00	.14	.00	.00	.00	.00		
15	.00	.79	.00	.00	.00	.00	.22	3.56	.00	.15	.00	.00	.00	.00		
16	.00	.00	.00	.00	.00	.00	.12	.05	.00	.00	.00	.00	.00	.00		
17	.00	.13	.00	.00	.00	.00	.00	.00	.65	.00	.77	.00	.00	.30		
18	.00	.16	.00	.00	.00	.00	.00	.00	.00	.12	.66	.00	.00	.00		
19	.18	.00	.16	.00	.00	.00	.00	.00	.00	.00	.89	.14	.00	.00		
20	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00		
21	.00	.00	.00	.37	.00	.00	.41	.46	.00	.00	.00	.00	.00	.00		
22	.00	.00	.00	.96	.00	.00	.00	.25	.00	.00	.00	.00	.00	.00		
23	.00	.00	.00	1.72	.00	.12	.00	.00	.00	.00	.00	.00	.00	.00		
24	.16	.00	.71	.00	.00	.00	.03	.00	.00	.00	.25	.31	.00	.00		
25	.00	.00	.19	.12	.00	.00	.00	.28	.00	.00	.00	.00	.00	.00		
26	.00	.00	.00	1.60	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00		
27	.00	.19	.00	.03	.01	.00	.00	.00	3.08	.00	1.69	.00	.00	.00		
28	.00	.155	.58	.00	.00	.00	.00	.00	2.33	1.17	.14	.00	.00	.00		
29	.00	.02	.00	.00	.00	.26	1.82	.00	.03	.00	.00	.00	.00	.00		
30	.00		.00	.00	.03	.23	.02	.00	.00	.00	.00	.05	.00	.00		
31	.60		.00		.29		.00	.00		.00		.00		.00		
TOTAL	3.84	3.05	6.12	8.52	2.22	1.85	6.35	6.69	6.09	1.81	5.21	7.97				
STA AV	3.30	4.41	4.95	4.94	3.69	3.23	4.91	3.24	4.51	1.85	4.25	5.10				
NOTES: FOR DAILY AIR TEMPERATURES IN THE VICINITY, SEE TABLE FOR WATERSHED W-4, P. 62.1-1. DAILY PRECIPITATION VALUES THIESSEN WEIGHTED FROM RAIN GAGES 3, 11, 24, AND 26. STATION AVERAGE IS FOR 7-YR (1958-64) RECORD PERIOD.																

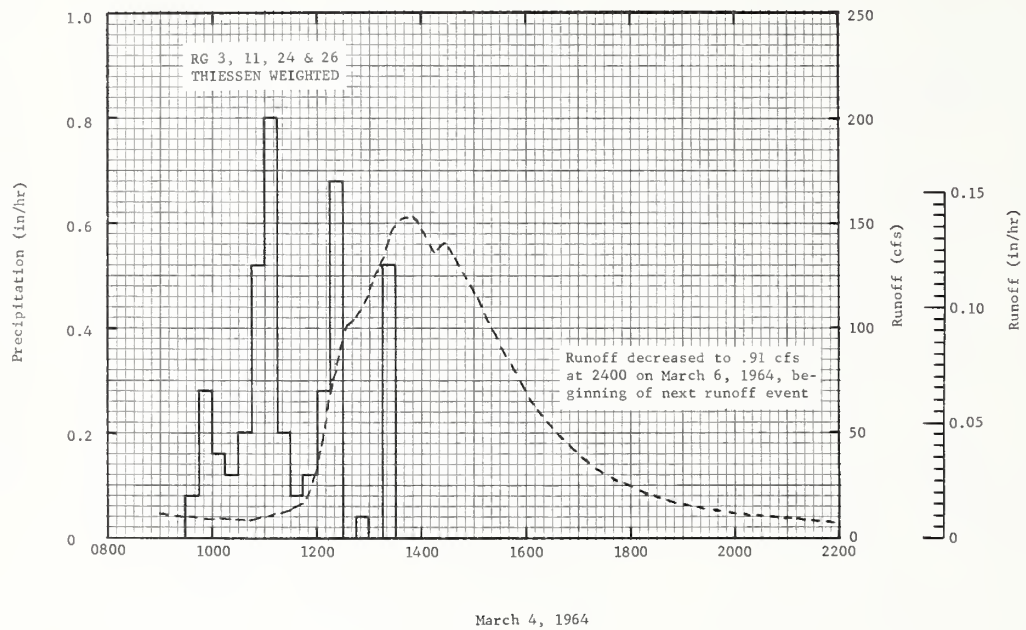
Cooperative Research Project of USDA, University of Mississippi, and Mississippi State Agricultural Experiment Station

1964 MEAN DAILY DISCHARGE (cfs)						OXFORD, MISSISSIPPI							WATERSHED W-35A 62.18	
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1	.00	.98	.00	.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.17	15.18	.00	.40	.00	.00	.00	.00	.42	.00	.00	.20	.00
3	.00	.00	2.43	.00	.10	.00	.00	.00	.00	.00	.00	.00	131.21	.00
4	.00	.01	32.34	21.26	.00	.00	.00	.00	.00	.00	.00	.00	12.89	.00
5	.00	3.40	3.24	8.07	.00	.00	.00	.00	.00	.00	.00	.00	1.16	.00
6	8.35	1.61	1.02	2.55	.00	.00	.00	.00	.00	.00	.00	.00	.71	.00
7	1.40	.17	1.51	1.61	.00	.00	.00	.00	.00	.00	.00	.00	.53	.00
8	17.68	.00	1.73	1.37	.00	.00	.00	.00	.00	.00	.00	.00	.27	.00
9	5.95	.00	14.31	.68	.90	.00	.00	.00	.00	.00	.00	.00	.10	.00
10	1.37	.00	3.84	.00	.20	.00	.00	.00	.00	.00	.00	.00	9.69	.00
11	1.73	.00	1.61	.01	.00	.00	4.70	3.15	.00	.00	.00	.00	45.72	.00
12	8.98	.00	1.16	4.00	4.39	.00	8.35	.00	.00	.00	.00	.00	2.26	.00
13	.52	8.76	.45	11.22	.46	.00	.00	.00	.00	.00	.00	.00	.94	.00
14	.26	2.00	7.72	1.28	.00	.00	.00	.00	.00	.00	.00	.00	.71	.00
15	.00	16.80	4.03	.81	.00	.00	3.81	47.50	.00	.00	.00	.00	.91	.00
16	.00	2.14	1.14	.46	.00	.00	.41	5.09	.00	.00	.00	.00	.63	.00
17	.00	1.02	.81	.00	.00	.00	.00	.00	.00	.00	.00	1.60	.43	.00
18	.00	1.26	.35	.00	.00	.00	.00	.00	.00	.00	.00	3.20	.26	.00
19	.04	1.06	.35	.00	.00	.00	.00	.00	.00	.00	.00	12.53	.26	.00
20	.08	.43	.35	.00	.00	.00	.00	.00	.00	.00	.00	1.19	.61	.00
21	.04	.21	.00	.00	.00	.00	.03	.09	.00	.00	.00	.07	.61	.00
22	.00	.04	.01	14.98	.00	.00	.00	.31	.00	.00	.00	.00	.52	.00
23	.00	.00	.00	54.91	.00	.00	.00	.00	.00	.00	.00	.00	.43	.00
24	.04	.00	.05	2.70	.00	.00	.00	.00	.00	.00	.00	.00	1.21	.00
25	.04	.00	5.84	2.24	.00	.00	.00	.00	.00	.00	.00	.00	1.93	.00
26	.00	.00	.78	37.30	.00	.00	.00	.00	.00	.00	.00	.00	.35	.00
27	.00	.00	.10	9.04	.00	.00	.00	.00	19.86	.00	.00	15.29	.00	.00
28	.00	.44	6.44	1.49	.00	.00	.00	.00	42.03	2.04	.00	20.31	.00	.00
29	.00	.00	.78	.92	.00	.00	9.87	.00	.42	.00	.00	.63	.00	.00
30	.00	-----	.10	.53	.00	.00	.16	.00	.00	.00	.00	.17	.08	.00
31	3.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	-----	.00	.00
MEAN	1.59	1.39	3.47	5.91	.21	.00	.88	1.81	2.08	.08	1.83	6.92	.00	.00
INCHES	1.08	.88	2.35	3.87	.14	.00	.60	1.23	1.36	.05	1.20	4.68	.00	.00

NOTES: TO CONVERT DISCHARGE IN GFS TO IN/DAY, MULTIPLY BY 0.0218365. QUALITY OF RECORDS: FAIR, ESTIMATED TO BE WITHIN 15% OF ACTUAL.

1964 SELECTED RUNOFF EVENT			OXFORD, MISSISSIPPI				WATERSHED W-35A 62.18			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
			Event of March 4-6, 1964 1/							
3-4	2/ .42	3/.1140	3-4	4 RG	AVG 4/		3-4	0900	11.83	.0000
				0930	.00	.00		1046	8.45	.0163
				0945	.08	.02		1144	16.28	.0272
				1000	.28	.09		1218	75.75	.0509
				1015	.16	.13		1234	102.55	.0725
				1030	.12	.16		1244	105.45	.0883
				1045	.20	.21		1312	132.45	.1388
				1100	.52	.34		1330	150.00	.1773
				1115	.80	.54		1350	153.18	.2233
				1130	.20	.59		1414	135.55	.2758
				1145	.08	.61		1428	140.32	.3051
				1200	.12	.64		1504	114.46	.3746
				1215	.28	.71		1604	66.15	.4568
				1230	.68	.88		1716	34.15	.5115
				1245	.00	.88		1828	20.00	.5411
				1300	.04	.89		1958	12.36	.5631
				1315	.00	.89		2214	6.43	.5825
				1330	.52	1.02		2400	5.34	.5920
							3-5	2400	1.13	.6627
							3-6	2400	5/ .91	.6851
Watershed conditions: 19% of area in cultivation, mostly row crop, poor to fair cover provided by residue from 1963 crop; 48% in pasture and 10% idle, fair to good cover; 22% woods, good cover; 1% bare gullies.										

NOTES: TO CONVERT RUNOFF IN GFS TO IN/HR, MULTIPLY BY 0.0009099. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISG. PUB. 945, P. 62.12-5. 1/ ISOHYETAL MAP (TOTAL RAINFALL FOR 3-4-64) ON P. 62.11-4. 2/ THIESSEN WEIGHTED RAINFALL (RAIN GAGES 3, 11, 24 AND 26) PRIOR TO 0930 ON 3-4-64. FOR 30-DAY ANTECEDENT P AND Q, SEE TABLES ON THIS AND PREVIOUS PAGE. 3/ RUNOFF PRIOR TO 0900 ON 3-4-64. 4/ THIESSEN WEIGHTED STORM RAINFALL, SAME RAIN GAGES. DAILY TOTALS FOR INDIVIDUAL RAIN GAGES LISTED ON P. 62.11-3. 5/ BEGINNING OF NEXT RUNOFF EVENT.



OXFORD, MISSISSIPPI WATERSHED W-35A

MONTHLY PRECIPITATION AND RUNOFF (inches)						TOMBSTONE, ARIZONA WATERSHED 63.001 AREA-36,900 ACRES (57.66 SQ. MILES)								63.01		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1 Q	.24	.05	.50	.31 .00	.00 .00	.03 .00	4.63 .14	1.98 .02	3.20 .31	.53 .00	.84 .00	.22 .00	12.53			
STA AVG P 2 Q	.70	.30	.47	.12 .00	.08 .00	.43 .00	3.45 .14	3.05 .02	1.03 .31	.75 .00	.42 .00	.39 .00	11.19			
MEAN P 3 68 YR	.84	.78	.62	.28	.18	.50	3.64	3.48	1.53	.68	.64	.85	14.02			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	7-22	.13	7-22	.08	9-9	.13	9-9	.16	9-9	.19	9-9	.19	9-8	.23	9-8	.31
MAXIMUMS FOR PERIOD OF RECORD																
1964 TO 1964	7-22	.13	7-22	.08	9-9	.13	9-9	.16	9-9	.19	9-9	.19	9-8	.23	9-8	.31
Notes: 1/ Monthly precipitation is arithmetic average of 78 rain gages on watershed. 2/ Precipitation records began January 1954; runoff records began April 1964 when flume structure with 22,500 cfs capacity was completed. For further clarification refer to 1963 Miscellaneous Publication, sub-title INSTRUMENTATION. Station average for precipitation based on period of record (54-64) and runoff station average based on 1 year (1964). 3/ Mean P based on 68-yr (1897-1964) U.S. Weather Bureau record period at Tombstone, Ariz.																
1964 SELECTED RUNOFF EVENTS						TOMBSTONE, ARIZONA WATERSHED 63.001								63.01		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
			Event of July 22, 1964 4/													
	RG R-56		7-22	RG	R-56		7-22									
7-7	.05	.0000		1815	0.00	0.00		2020	.000	.0000						
7-8	.03	.0000		1819	5.25	0.35		2021	.003	.0000						
7-12	.46	.0000		1822	2.40	0.47		2022	.016	.0002						
7-13	.10	.0000		1827	6.36	1.00		2023	.072	.0009						
7-17	.08	.0000		1830	12.40	1.62		2024	.084	.0022						
7-18	.08	.0003		1845	1.76	2.06		2025	.103	.0038						
7-20	.24	.0000		2320	0.00	0.00		2026	.111	.0056						
7-21	.16	.0000		2326	0.60	0.06		2027	.117	.0075						
				2335	0.33	0.11		2029	.120	.0114						
			7-23	2400	0.05	0.13		2030	.120	.0134						
				0124	0.04	0.18		2032	.121	.0174						
				0145	0.17	0.24		2034	.124	.0215						
				0234	0.01	0.25		2035	.126	.0236						
				0352	0.18	0.48		2036	.124	.0257						
								2037	.120	.0277						
								2039	.114	.0316						
								2041	.107	.0353						
								2043	.100	.0388						
								2045	.095	.0420						
								2047	.091	.0451						
								2049	.084	.0480						
								2051	.079	.0507						
								2053	.076	.0533						
								2055	.072	.0558						
								2057	.070	.0582						
								2059	.067	.0604						
								2100	.066	.0615						
								2102	.064	.0637						
								2104	.061	.0658						
								2106	.058	.0678						
								2108	.056	.0697						
								2110	.053	.0715						
								2113	.051	.0741						
								2116	.046	.0765						
								2119	.039	.0786						
								2122	.035	.0805						
								2125	.032	.0821						
								2130	.026	.0846						
								2135	.021	.0865						
Watershed conditions: Sixty-five percent of area in desert shrubs (whitethorn, creosotebush, and tarbush), with 23 percent cover and 2 percent grass cover. Thirty-five percent is grassland, with approximately 20 percent grass cover (crown spread) and 5 percent shrub cover. Subwatersheds 63.002, 63.003, 63.004, 63.006, 63.008, and 63.011 lie within the boundaries of Watershed 63.001.																
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 37,207. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-61, USDA MISC. PUB. 994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS SEE 1963 MISC. PUB. 1164, P. 63.1-2 AND P. 63.1-3. TABULATION OF SELECTED EVENTS FOR 1964 NOT COMPLETE FOR WATERSHEDS 63.002 AND 63.003. 4/ ISOHYETAL MAP ON P. 63.1-9.																

1964 SELECTED RUNOFF EVENT			TOMBSTONE, ARIZONA				WATERSHED 63.001				63.01	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
			Event of July 22, 1964 Continued									
							7-22	2140	.017	.0881		
								2145	.016	.0895		
								2150	.013	.0906		
								2155	.011	.0916		
								2200	.009	.0925		
								2205	.009	.0932		
								2210	.008	.0939		
								2215	.008	.0946		
								2220	.007	.0952		
								2225	.007	.0958		
								2230	.007	.0963		
								2240	.007	.0974		
								2250	.006	.0985		
								2300	.006	.0996		
								2320	.006	.1016		
							7-23	2325	.006	.1021		
								2330	.006	.1026		
								2345	.006	.1041		
								2400	.006	.1056		
								0030	.005	.1085		
								0100	.005	.1110		
								0102	.006	.1112		
								0105	.007	.1115		
								0110	.009	.1122		
								0116	.009	.1131		
								0120	.007	.1136		
								0125	.006	.1142		
								0130	.006	.1147		
								0140	.005	.1156		
								0150	.003	.1162		
							0200	.002	.1167			
							0215	.001	.1171			
							0230	.001	.1174			
							0245	.001	.1176			
							0250	.001	.1177			
							0300	.001	.1178			
							0315	.000	.1179			
							0320	.000	.1179			
							0325	.001	.1180			
							0330	.001	.1180			
							0345	.001	.1183			
							0400	.001	.1185			
							0500	.001	.1194			
							0600	.001	.1200			
							0700	.000	.1204			
							0800	.000	.1206			
							0900	.000	.1207			

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA WATERSHED 63.001 63.01							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 9-10, 1964 1/										
8-10	RG R-4 0.03	.0000	9-9	RG 1600	R-4 0.00	0.00	9-9	1834	.000	.0000
8-12	0.01	.0000		1614	0.13	0.03		1835	.003	.0000
8-14	0.02	.0000		1705	0.01	0.04		1836	.016	.0002
8-16	0.06	.0008	9-10	0001	0.00	0.00		1837	.017	.0004
8-26	0.02	.0000		0005	2.25	0.15		1839	.017	.0010
8-27	0.18	.0001		0008	2.60	0.28		1840	.016	.0013
9-8	0.31	.0394		0013	3.96	0.61		1843	.015	.0021
				0017	4.50	0.91		1845	.015	.0026
				0024	1.63	1.10		1850	.014	.0038
8-12	RG R-16 0.01	.0000		0027	4.20	1.31		1855	.013	.0049
8-13	0.01	.0000		0033	0.80	1.39		1900	.010	.0059
8-14	0.01	.0000		0054	0.00	1.39		1905	.009	.0067
8-16	0.47	.0008		0125	0.08	1.43		1910	.008	.0074
8-26	0.04	.0000		0357	0.03	1.50		1915	.007	.0081
8-27	0.58	.0001								
9-6	0.03	.0000		0651	0.00	1.51		1920	.007	.0087
9-7	0.05	.0000		1018	0.01	1.54		1925	.006	.0092
9-8	1.09	.0394						1930	.006	.0097
			9-9	RG	R-16			1935	.005	.0102
				1540	0.00	0.00		1940	.004	.0106
				1555	0.08	0.02				
				1601	0.40	0.06		1950	.004	.0113
				1603	0.60	0.08		2000	.004	.0119
								2015	.003	.0128
				1612	0.07	0.09		2030	.003	.0135
				1648	0.02	0.10		2100	.002	.0148
				2345	0.00	0.00				
				2400	1.28	0.32		2130	.002	.0157
			9-10	0004	3.45	0.55		2200	.001	.0163
								2230	.001	.0167
				0015	2.24	0.96		2300	.000	.0170
				0025	2.10	1.31		2400	.000	.0172
				0036	0.05	1.32				
				0059	0.16	1.38	9-10	0027	.000	.0172
				0130	0.14	1.45		0028	.002	.0172
								0029	.003	.0173
				0205	0.02	1.46		0030	.004	.0173
				0230	0.05	1.48		0032	.004	.0175
				0315	0.01	1.49				
				0402	0.03	1.51		0034	.004	.0176
				0506	0.01	1.52		0036	.004	.0177
								0037	.004	.0178
				0555	0.02	1.54		0040	.004	.0180
								0042	.004	.0182
								0043	.009	.0183
								0044	.011	.0184
								0045	.013	.0186
								0047	.013	.0191
								0049	.014	.0195
								.0051	.015	.0200
								0053	.016	.0205
								0055	.018	.0210
								0057	.020	.0217
								0059	.022	.0224
								0100	.028	.0228
								0101	.035	.0233
								0102	.043	.0240
								0103	.050	.0247
								0104	.055	.0256
								0106	.064	.0276
								0108	.070	.0298
								0110	.073	.0322
								0115	.078	.0385
								0117	.080	.0411
								0120	.080	.0451
								0125	.079	.0517
								0127	.077	.0543
								0130	.072	.0580
								0135	.070	.0640
								0140	.069	.0698
								0142	.069	.0721
								0145	.070	.0755
								0150	.067	.0812
								0155	.061	.0865

Watershed conditions: Sixty-five percent of area in desert shrubs (whitethorn, creosotebush, and tarbush), with 23 percent cover and 2 percent grass cover. Thirty-five percent is grassland, with approximately 20 percent grass cover (crown spread) and 5 percent shrub cover. Subwatersheds 63.002, 63.003, 63.004, 63.006, 63.008, and 63.011 lie within the boundaries of Watershed 63.001.

Continued on next page

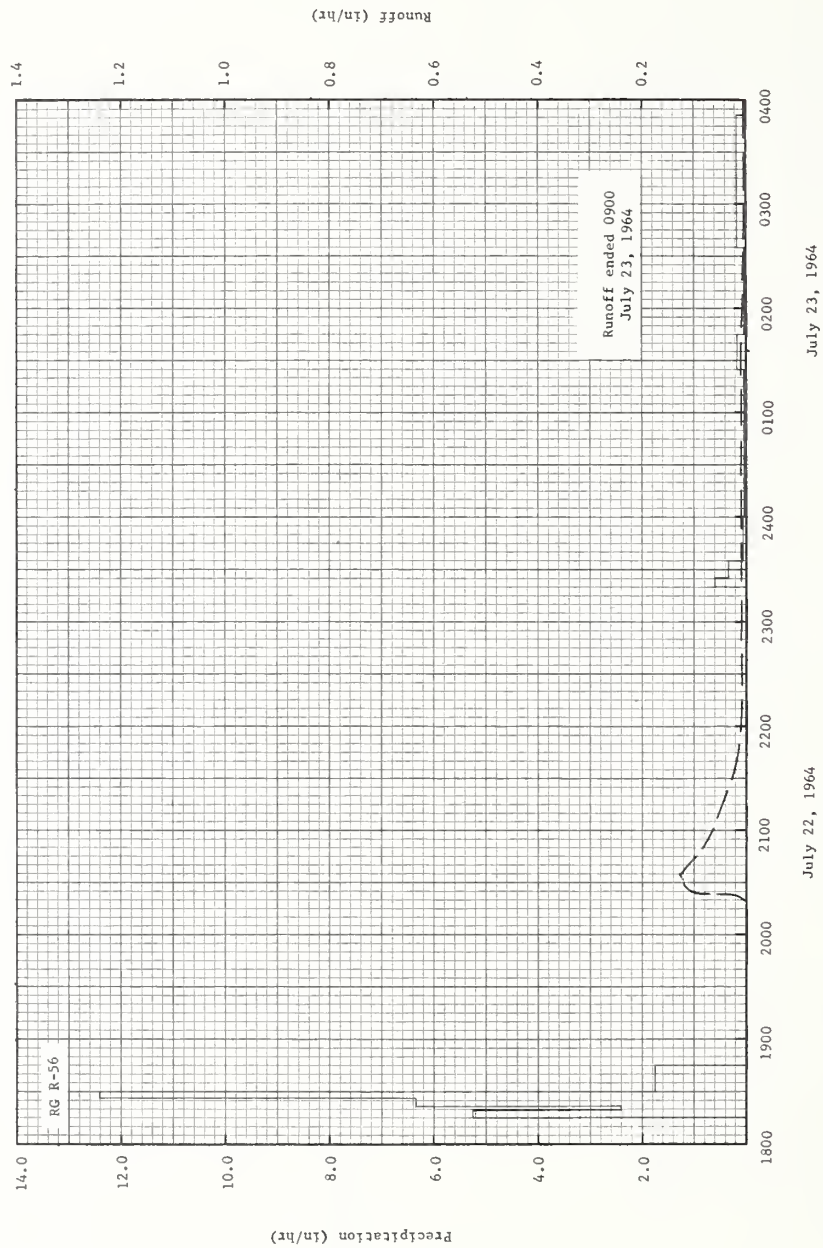
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 37,207. 1/ ISOHYETAL MAP ON P. 63.1-10.

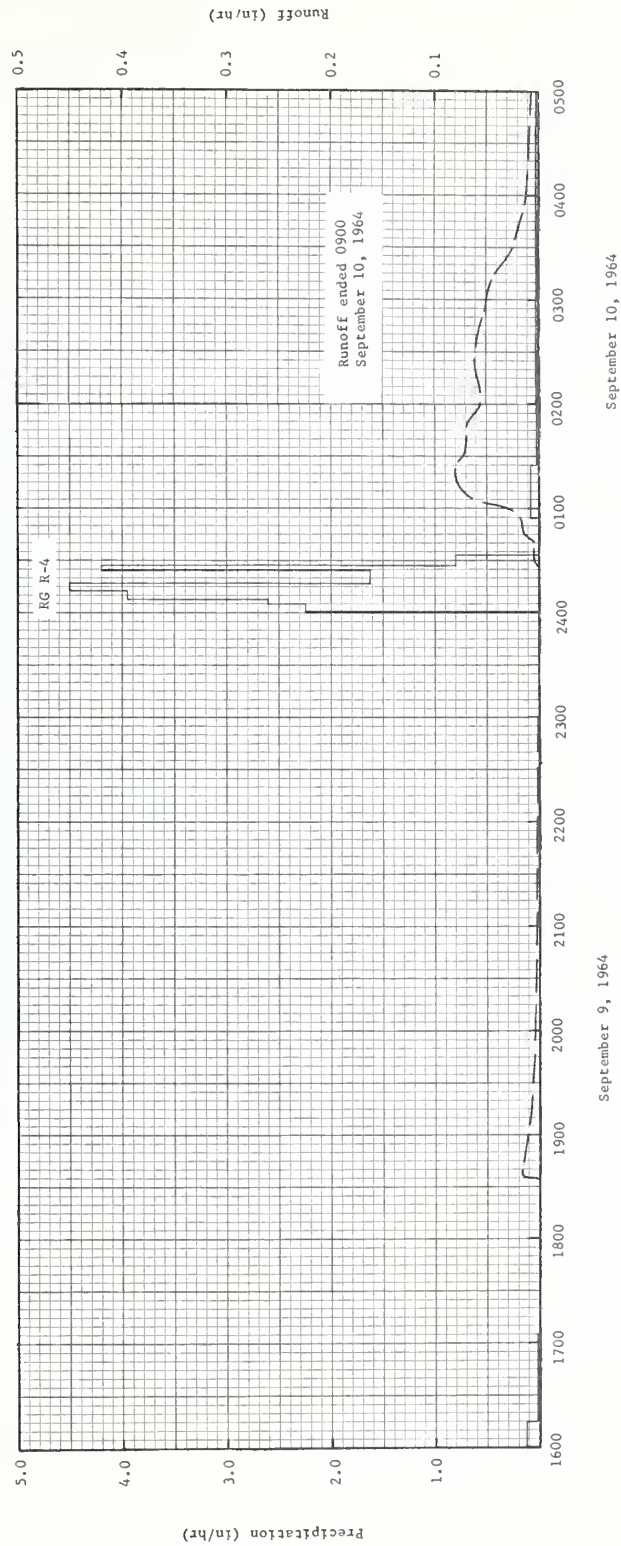
1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.001				63.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches) F	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of September 9-10, 1964—Continued											
							9-10	0200	.056	.0914	
								0205	.055	.0961	
								0207	.055	.0979	
								0210	.056	.1007	
								0215	.058	.1054	
								0220	.059	.1103	
								0224	.060	.1143	
								0230	.059	.1202	
								0235	.058	.1251	
								0240	.057	.1298	
								0245	.055	.1345	
								0250	.054	.1390	
								0255	.051	.1434	
								0257	.050	.1451	
								0300	.050	.1476	
								0304	.047	.1508	
								0306	.048	.1524	
								0308	.048	.1540	
								0310	.046	.1556	
								0315	.041	.1592	
								0320	.035	.1624	
								0325	.029	.1651	
								0330	.025	.1674	
								0335	.022	.1693	
								0340	.020	.1711	
								0345	.017	.1726	
								0350	.015	.1739	
								0355	.013	.1751	
								0400	.012	.1762	
								0410	.010	.1779	
								0420	.009	.1795	
								0430	.008	.1809	
								0440	.007	.1822	
								0450	.007	.1834	
								0500	.006	.1844	
								0515	.006	.1859	
								0530	.005	.1873	
								0600	.005	.1898	
								0630	.003	.1918	
								0700	.002	.1932	
								0730	.001	.1941	
								0800	.001	.1945	
								0830	.000	.1947	
								0900	.000	.1947	
<p>Watershed conditions: Sixty-five percent of area in desert shrubs (whitethorn, creosotebush, and tarbush), with 23 percent cover and 2 percent grass cover. Thirty-five percent is grassland, with approximately 20 percent grass cover (crown spread) and 5 percent shrub cover. Subwatersheds 63.002, 63.003, 63.004, 63.006, 63.008, and 63.011 lie within the boundaries of Watershed 63.001.</p>											
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS MULTIPLY BY 37,207.											

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.001				63.01
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of September 11, 1964 ^{1/}											
	RG R-56		9-11	RG	R-56		9-11				
8-12	.05	.0000		1700	0.00	0.00		1843	.000	.0000	
8-19	.08	.0000		1705	1.08	0.09		1845	.000	.0000	
8-20	.20	.0000		1711	1.60	0.25		1847	.001	.0000	
8-25	.05	.0000		1713	4.50	0.40		1849	.002	.0001	
8-27	.49	.0001		1716	2.80	0.54		1851	.002	.0001	
9-6	.29	.0000		1721	3.00	0.79		1853	.002	.0002	
9-8	.92	.0394		1727	3.10	1.10		1854	.002	.0002	
9-9	.85	.0172		1734	4.11	1.58		1856	.002	.0003	
9-10	1.10	.1775		1739	3.36	1.86		1900	.002	.0004	
				1745	2.30	2.09		1905	.001	.0005	
				1751	1.80	2.27		1910	.000	.0006	
				1759	1.50	2.47		1915	.000	.0006	
				1816	0.35	2.57		1920	.000	.0007	
				1918	0.00	2.57		1925	.000	.0007	
				1947	0.10	2.62		1930	.000	.0007	
								1951	.000	.0007	
								1952	.000	.0007	
								1953	.028	.0009	
								1954	.037	.0015	
								1955	.045	.0022	
								1956	.048	.0029	
								1957	.051	.0037	
								1958	.051	.0046	
								1959	.049	.0054	
								2000	.047	.0062	
								2002	.054	.0079	
								2004	.059	.0098	
								2006	.065	.0119	
								2008	.070	.0142	
								2010	.076	.0166	
								2011	.074	.0179	
								2012	.073	.0191	
								2014	.077	.0216	
								2015	.073	.0228	
								2017	.072	.0253	
								2019	.069	.0276	
								2020	.065	.0287	
								2022	.064	.0309	
								2024	.063	.0330	
								2026	.063	.0351	
								2030	.060	.0392	
								2035	.055	.0440	
								2040	.048	.0483	
								2045	.040	.0519	
								2050	.030	.0549	
								2055	.022	.0570	
								2100	.019	.0587	
								2102	.018	.0593	
								2103	.018	.0596	
								2105	.016	.0602	
								2110	.011	.0613	
								2115	.008	.0621	
								2120	.007	.0627	
								2130	.007	.0639	
								2140	.007	.0650	
								2200	.006	.0671	
								2215	.006	.0685	
								2230	.005	.0699	
								2245	.005	.0711	
								2300	.004	.0722	
								2330	.003	.0740	
								2400	.002	.0753	
								0030	.002	.0763	
								0100	.001	.0769	
								0130	.001	.0773	
								0200	.000	.0775	
								0230	.000	.0776	
								0300	.000	.0776	

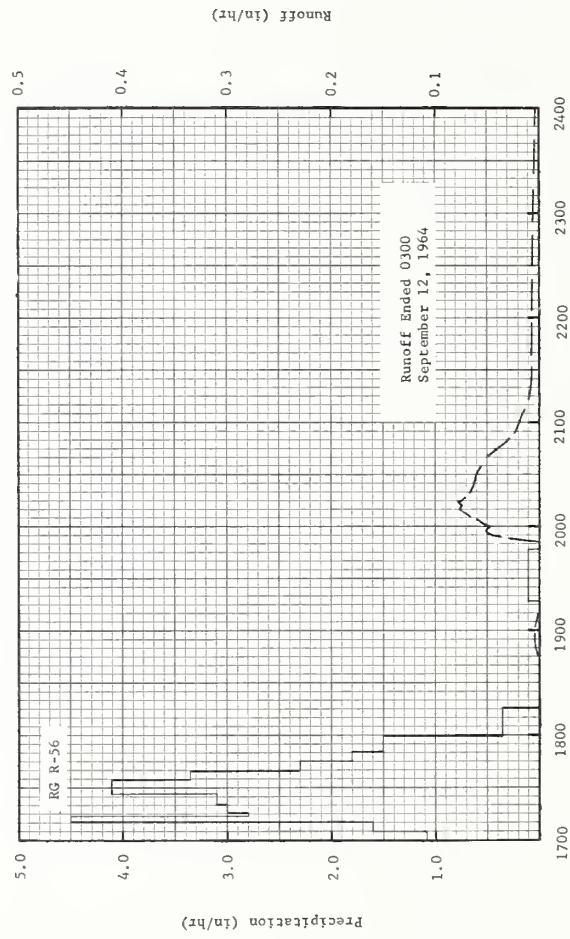
Watershed conditions: Sixty-five percent of area in desert shrubs (whitethorn, creosotebush, and tarbush), with 23 percent cover and 2 percent grass cover. Thirty-five percent is grassland, with approximately 20 percent grass cover (crown spread) and 5 percent shrub cover. Subwatersheds 63.002, 63.003, 63.004, 63.006, 63.008, and 63.011 lie within the boundaries of Watershed 63.001.

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 37,207. ^{1/}ISOHYETAL MAP ON P. 63.1-11.



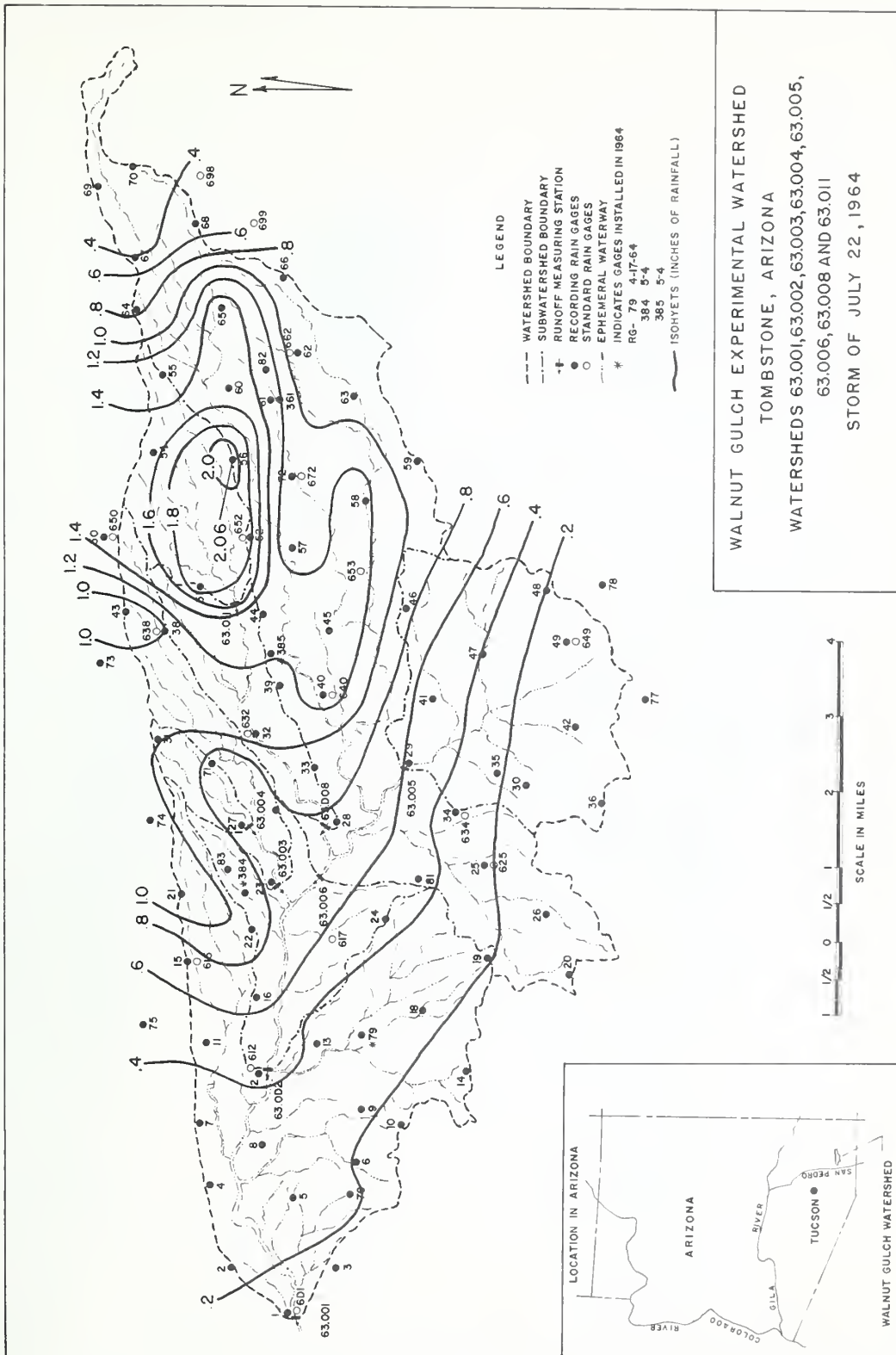


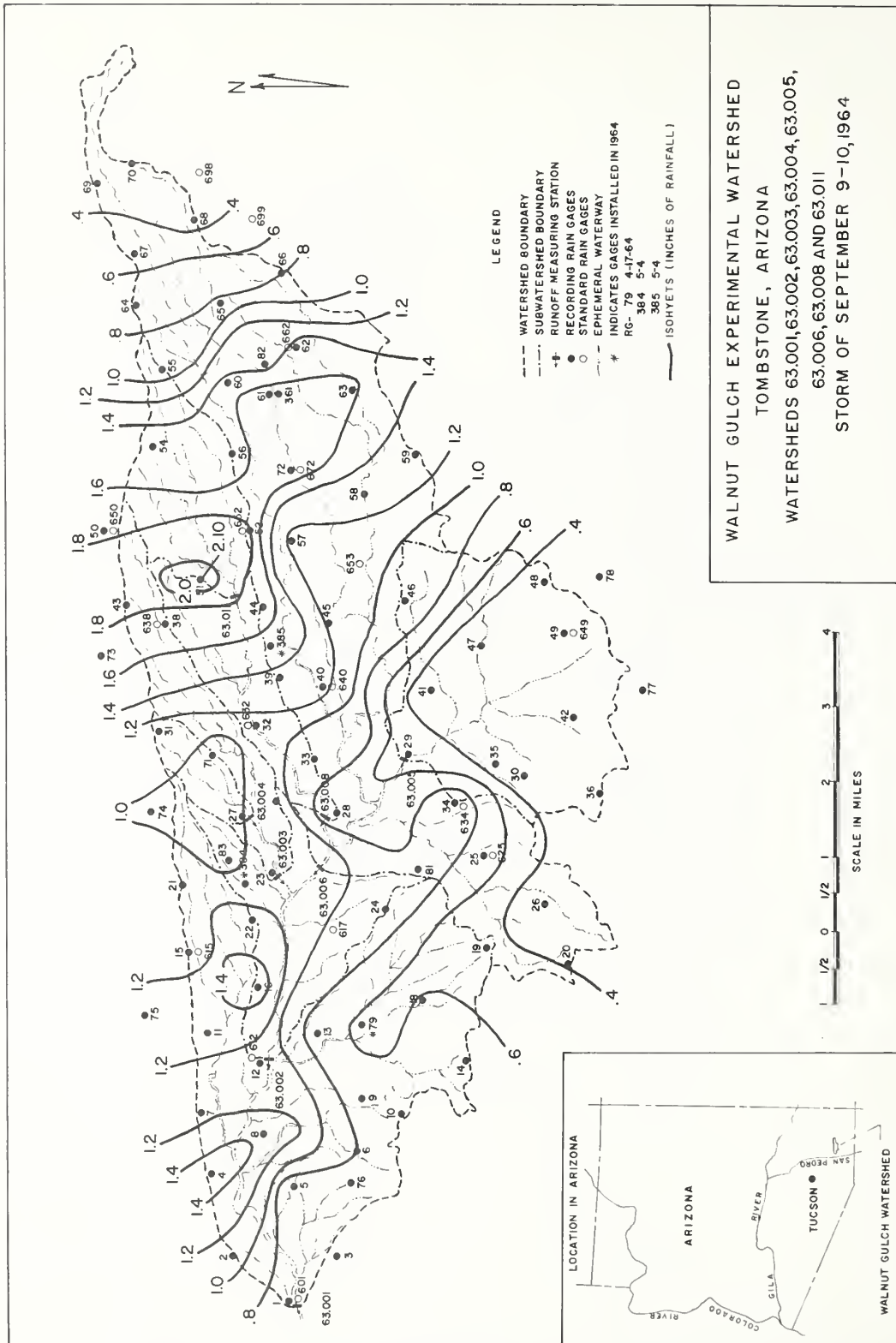
TONESTONE, ARIZONA WATERSHED 63.001

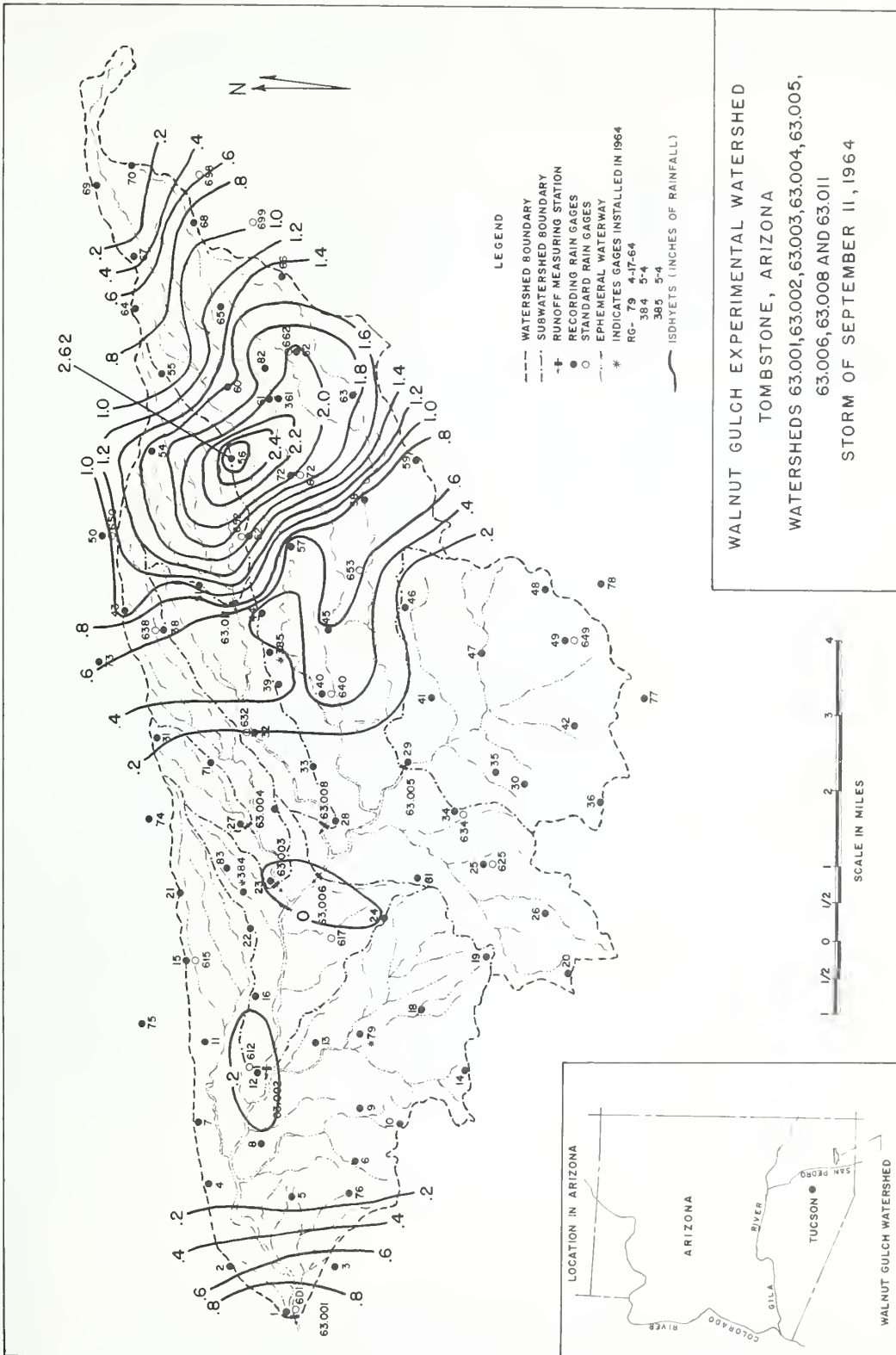


September 11, 1964

TOWNESTONE, ARIZONA WATERSHED 63.001





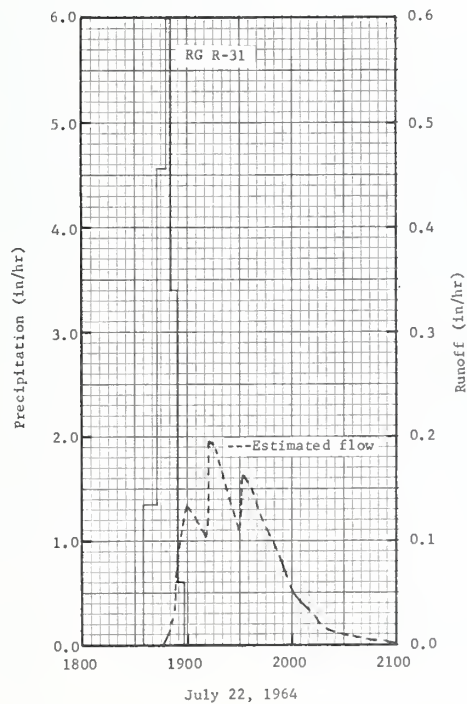


MONTHLY PRECIPITATION AND RUNOFF (inches) 1/						TOMBSTONE, ARIZONA WATERSHED 63.004 AREA—560 ACRES								63.04		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
P																
Q																
STA AVG P																
MEAN 68 YR	2/	.84	.78	.62	.28	.18	.50	3.64	3.48	1.53	.68	.64	.85	14.02		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
1964	9-9	.1950E	7-22	.1290E	9-9	.1655E	9-9	.1661E	9-9	.1661E	9-9	.1661E	9-8	.1796E	9-8	.1796E
MAXIMUMS FOR PERIOD OF RECORD 1/																
19	TO															
NOTES: Watershed conditions: Vegetative cover; Entire area dominated by desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 38 percent and an understory of grasses with approximately 0.6 percent basal cover. 1/ Not calculated. Data are being re-evaluated. As soon as re-tabulation is completed, revised data will be reported for these two sections. Selected events in this report are from re-evaluated data. 2/ Mean P based on 68-yr. (1897-1963) U. S. Weather Bureau record period at Tombstone, Ariz.																
1964 SELECTED RUNOFF EVENTS						TOMBSTONE, ARIZONA WATERSHED 63.004										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 22, 1964 3/																
7-7	.20	.0000	7-22	RG	R-31	.00	7-22	1847	.000	.0000						
7-8	.03	.0000		1835	.00	.00		1848	.001	.0000						
7-12	.37	.0000		1843	1.35	.18		1849	.006	.0001						
7-13	.05	.0000		1848	4.56	.56		1850	.014	.0002						
				1851	6.00	.86										
7-13	.93	.0227E		1854	3.40	1.03		1851	.019E	.0005E						
7-17	.15	.0000		1858	.60	1.07		1852	.025E	.0009E						
7-20	.01	.0000						1853	.031E	.0013E						
7-20	.04	.0000						1854	.040E	.0019E						
7-20	.02	.0000						1855	.051E	.0027E						
Watershed conditions: Vegetative cover; Entire area dominated by desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 38 percent and an understory of grasses with approximately 0.6 percent basal cover.																
								1856	.064E	.0037E						
								1857	.078E	.0048E						
								1858	.095E	.0063E						
								1859	.112E	.0080E						
								1900	.132E	.0100E						
								1902	.130E	.0144E						
								1905	.120E	.0206E						
								1907	.113E	.0245E						
								1911	.103E	.0317E						
								1912	.145E	.0338E						
								1913	.195E	.0366E						
								1915	.193E	.0431E						
								1918	.179E	.0524E						
								1920	.162E	.0581E						
								1923	.147E	.0658E						
								1925	.135E	.0705E						
								1928	.120E	.0769E						
								1930	.110E	.0807E						
								1931	.147E	.0829E						
								1932	.162E	.0854E						
								1935	.157E	.0934E						
								1937	.147E	.0985E						
								1940	.132E	.1055E						
								1943	.119E	.1117E						
								1946	.105E	.1173E						
								1949	.094E	.1223E						
								1952	.083E	.1267E						
								1954	.074	.1294						
								1956	.065	.1317						
								1958	.058	.1337						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 565. FOR CONTOUR MAP OF WATERSHED AND FOR GEOLOGY AND VEGETATION MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 63.1-2 AND 1963 USDA MISC. PUB. 1164, P. 63.1-2 AND P. 63.1-3. 3/ ISOHYETAL MAP ON P. 63.1-9. NO SELECTED RUNOFF EVENT FOR 1963. SELECTED RUNOFF EVENT FOR 1964 WAS OBTAINED FROM RE-EVALUATED DATA.																

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.004				63.04	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
			<u>Event of July 22, 1964 continued</u>									
							7-22	2000	.051	.1355		
								2003	.046	.1380		
								2005	.042	.1394		
								2009	.034E	.1419E		
								2012	.029E	.1435E		
								2015	.023E	.1448E		
								2018	.018E	.1458E		
								2022	.014E	.1469E		
								2027	.011E	.1480E		
								2032	.008E	.1488E		
<u>Watershed conditions:</u> Vegetative cover: Entire area dominated by desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 38 percent and an understory of grasses with approximately 0.6 percent basal cover.								2037	.006E	.1494E		
									2042	.004E	.1498E	
									2047	.002E	.1500E	
									2052	.001E	.1502E	
									2057	.001E	.1503E	
										2102	.000E	.1503E
										2107	.000E	.1503E
										2112	.000E	.1503E

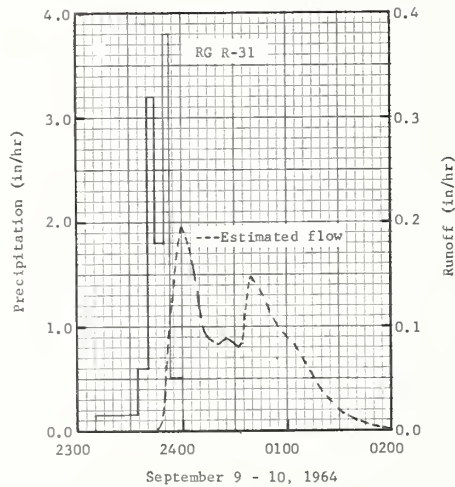
Watershed conditions: Vegetative cover: Entire area dominated by desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 38 percent and an understory of grasses with approximately 0.6 percent basal cover.

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 565.



TOMBSTONE, ARIZONA WATERSHED 63.004

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA WATERSHED 63.004				63.04			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 9-10, 1964 ^{1/}										
8-13	RG R-31 .05	.0000	9-9	RG	R-31	.00	9-9	2345	.000E	.0000E
8-16	.24	.0201E		2310	.00	.00		2346	.001E	.0000E
8-17	.06	.0000		2334	.13	.05		2347	.004E	.0000E
8-19	.06	.0000		2341	.60	.12		2348	.011E	.0002E
				2344	3.20	.28				
8-25	.25	.0000		2350	1.80	.46		2349	.022E	.0004E
8-26	.05	.0000		2353	3.80	.65		2350	.040E	.0010E
8-27	.58	.0000		2400	.51	.71		2351	.059E	.0018E
9-4	.32	.0000						2352	.078E	.0029E
9-6	.23	.0000						2353	.095E	.0044E
9-8	1.06	.0135E						2354	.112E	.0061E
9-9	2/.39	.0000						2355	.126E	.0081E
Watershed conditions: Vegetative cover: Entire area dominated by desert shrubs (whitethorn, creosote bush, and tarbush) with a crown spread approximating 38 percent approximately 0.6 percent basal cover.							9-10	2356	.139E	.0103E
								2357	.154E	.0127E
								2358	.171E	.0155E
								2359	.188E	.0184E
								2400	.195E	.0216E
								0002	.188E	.0280E
								0005	.172	.0370
								0006	.161	.0398
								0007	.150	.0424
								0008	.139	.0448
								0009	.130	.0470
								0010	.120	.0491
								0012	.105	.0528
								0015	.088	.0577
								0020	.083	.0648
								0025	.088	.0720
								0030	.083	.0791
								0033	.079	.0832
								0035	.083E	.0859E
								0036	.112E	.0875E
								0037	.145E	.0897E
								0038	.147E	.0921E
								0040	.148E	.0970E
								0042	.147E	.1019E
								0045	.135E	.1090E
								0048	.121E	.1154E
								0050	.113E	.1193E
								0053	.105E	.1248E
								0055	.100E	.1282E
								0100	.090E	.1361E
								0105	.080E	.1432E
								0110	.066E	.1493E
								0113	.056E	.1524E
								0115	.050E	.1541E
								0118	.042E	.1564E
								0120	.038E	.1578E
								0123	.033E	.1595E
								0125	.029E	.1606E
								0128	.023E	.1619E
								0130	.020E	.1626E
								0133	.016E	.1635E
								0135	.014E	.1640E
								0140	.009E	.1649E
								0145	.005E	.1655E
								0150	.003E	.1659E
								0155	.001E	.1660E
								0200	.000E	.1661E
								0205	.000E	.1661E
								0208	.000E	.1661E



TOMBSTONE, ARIZONA WATERSHED 63.004

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 565. ^{1/} ISOHYETAL MAP ON P. 63.1-10. ^{2/} RAIN ENDED AT 1633.

MONTHLY PRECIPITATION AND RUNOFF (inches)							TOMBSTONE, ARIZONA WATERSHED 63.006 AREA—23,500 ACRES (36.7 SQ. MILES)							63.06		
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ₁ /Q	.20 .00	.07 .00	.50 .00	.28 .00	.00 .00	.01 .00	4.77 .23	2.05 .04	3.65 .48	.60 .00	.77 .00	.22 .00	13.12 .75		
STA AVG	P ₂ /Q	.57 .00	.15 .00	.36 .00	.14 .00	.00 .00	.08 .00	3.78 .12	2.16 .10	2.16 .18	.33 .00	.95 .00	.48 .00	11.16 .40		
MEAN	P ₃ /Q	.84	.78	.62	.28	.18	.50	3.64	3.48	1.53	.68	.64	.85	14.02		
68 YR																
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
64	7-22	.310	7-22	.1787	7-22	.2092	7-22	.2187	9-9	.2547	9-9	.2563	9-10	.3827	9-8	.5255
MAXIMUMS FOR PERIOD OF RECORD																
19	TO															
19																
NOTES: Watershed conditions: Desert grassland range; drainage area includes watersheds 63.008 and 63.011. 1/ Monthly precipitation is the arithmetic average of 44 rain gages. 2/ Precipitation and runoff record began July 9, 1962 upon completion of flume structure. 3/ Mean P based on 68-yr (1897-1964) U. S. Weather Bureau record period at Tombstone, Ariz.																
1964 SELECTED RUNOFF EVENTS							TOMBSTONE, ARIZONA WATERSHED 63.006							63.06		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MD-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MD-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MD-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of July 22, 1964 4/																
	RG R-56		7-22	RG	R-56		7-22									
7-7	0.05	0.0004		1815	0.00	0.00		1843	.000	.0000						
7-8	0.03			1819	5.25	0.35		1853	.000	.0000						
7-12	0.46			1822	2.40	0.47		1900	.000	.0000						
7-13	0.10			1827	6.36	1.00		1905	.001	.0001						
7-17	0.08			1830	12.40	1.62		1910	.001	.0001						
7-18	0.08			1845	1.76	2.06		1911	.003	.0002						
7-20	0.24		7-22	2320	0.00	0.00		1912	.015	.0003						
7-21	0.16			2326	0.60	0.06		1915	.020	.0012						
				2335	0.33	0.11		1918	.038	.0026						
				2400	0.05	0.13		1919	.069	.0035						
			7-23	0124	0.04	0.18		1920	.083	.0048						
				0145	0.17	0.24		1922	.118	.0082						
				0234	0.01	0.25		1925	.152	.0149						
				0352	0.18	0.48		1926	.174	.0176						
								1927	.196	.0207						
								1928	.229	.0243						
								1929	.244	.0282						
								1930	.259	.0324						
								1931	.289	.0370						
								1932	.270	.0416						
								1933	.285	.0463						
								1934	.303	.0512						
								1935	.310	.0563						
								1937	.292	.0663						
								1938	.285	.0711						
								1939	.294	.0759						
								1940	.274	.0807						
								1942	.259	.0895						
								1945	.230	.1018						
								1946	.242	.1057						
								1948	.213	.1133						
								1950	.205	.1203						
								1952	.196	.1269						
								1955	.181	.1364						
								1958	.152	.1447						
								2000	.141	.1496						
								2005	.125	.1607						
								2010	.094	.1698						
								2013	.083	.1742						
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696. FOR CONTOUR MAP OF WATERSHED AND FOR GEOLOGY AND VEGETATION MAP, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, P. 63.1-2 AND 1963 USDA MISC. PUB. 1164, P. 63.1-2 AND P. 63.1-3. 4/ ISOHYETAL MAP ON P. 63.1-9.																

Cooperative Research Project of USDA and Arizona Agricultural Experiment Station

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.006		63.06	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			Event of July 22, 1964 Continued							
							7-22	2015	.081	.1770
								2020	.076	.1835
								2025	.068	.1895
								2030	.052	.1945
								2035	.038	.1983
								2045	.020	.2031
								2055	.015	.2060
								2100	.013	.2071
								2110	.011	.2091
								2120	.009	.2108
								2130	.008	.2122
								2140	.007	.2135
								2150	.004	.2144
								2200	.002	.2149
								2210	.004	.2154
								2220	.003	.2160
								2230	.002	.2164
								2240	.001	.2167
								2250	.001	.2169
								2300	.001	.2170
								2310	.001	.2172
								2320	.001	.2173
								2330	.000	.2173
								2340	.000	.2174
								2350	.000	.2175
							7-23	2400	.000	.2175
								0010	.000	.2176
								0020	.000	.2176
								0030	.000	.2176
								0040	.000	.2176
								0050	.005	.2180
								0100	.005	.2189
								0130	.002	.2209
								0200	.002	.2219
								0230	.001	.2226
								0300	.000	.2230
								0330	.000	.2232
								0400	.000	.2233
								0430	.000	.2233
								0500	.000	.2233
								0900	.000	.2234
								1400	.000	.2234
			Event of September 9-10, 1964 1/							
	RG R-51		9-9	RG	R-51		9-9	1658	.000	.0000
8-9	0.07	.0087		1615	0.00	0.00		1659	.000	.0000
8-13	0.06			1618	2.20	0.11		1700	.000	.0000
8-20	0.13			1623	2.28	0.30		1701	.003	.0000
8-25	0.08			1627	3.00	0.50				
				1630	2.60	0.63		1702	.015	.0002
8-26	0.05			1643	0.32	0.70		1703	.016	.0004
8-27	0.66	.0004		2000	0.00	0.00		1704	.017	.0007
9-6	0.18		9-9	2115	0.08	0.10		1705	.018	.0010
9-8	0.88	.0600		2350	0.00	0.00		1706	.021	.0013
				2358	2.76	0.37		1707	.028	.0017
				2400	1.50	0.42		1708	.038	.0023
			9-10	0005	5.52	0.88		1710	.048	.0037
				0018	1.85	1.28		1712	.058	.0055
				0029	1.04	1.47		1715	.062	.0085
				0039	1.08	1.65		1720	.056	.0134
				0047	2.10	1.93		1725	.051	.0179
				0333	0.06	2.10		1730	.042	.0218
								1740	.026	.0275
								1745	.021	.0295
			Continued on next page							
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696. 1/ ISOHYETAL MAP ON P. 63.1-10										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696. 1/ ISOHYETAL MAP ON P. 63.1-10

1964		SELECTED RUNOFF EVENTS					TOMBSTONE, ARIZONA		WATERSHED 63.006		63.06
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF				
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
Event of September 9-10, 1964—Continued											
							9-9	1750	.017	.0310	
								1753	.015	.0318	
								1800	.012	.0334	
								1810	.007	.0350	
								1817	.003	.0356	
								1820	.002	.0357	
								1830	.001	.0360	
								1840	.001	.0362	
								1847	.001	.0363	
								1855	.001	.0365	
								1900	.001	.0366	
								1915	.001	.0369	
								1930	.001	.0371	
								2000	.001	.0375	
								2030	.000	.0378	
								2100	.000	.0380	
								2130	.000	.0381	
								2200	.000	.0382	
								2300	.000	.0382	
								2330	.000	.0383	
							9-10	2345	.000	.0383	
								2400	.001	.0384	
								0005	.002	.0385	
								0007	.003	.0386	
								0008	.015	.0387	
								0009	.025	.0391	
								0010	.029	.0395	
								0012	.038	.0407	
								0015	.043	.0427	
								0017	.053	.0443	
								0018	.069	.0453	
								0019	.075	.0465	
								0020	.079	.0478	
								0022	.083	.0505	
								0025	.092	.0549	
								0027	.098	.0580	
								0029	.101	.0614	
								0032	.089	.0661	
								0035	.099	.0708	
								0040	.107	.0794	
								0042	.108	.0830	
								0045	.106	.0883	
								0050	.106	.0971	
								0053	.108	.1025	
								0054	.111	.1043	
								0055	.108	.1061	
								0100	.093	.1145	
								0103	.083	.1189	
								0105	.082	.1216	
								0110	.078	.1283	
								0115	.080	.1349	
								0119	.083	.1404	
								0120	.084	.1418	
								0125	.091	.1491	
								0130	.096	.1569	
								0135	.087	.1645	
								0140	.083	.1717	
								0145	.081	.1785	
								0150	.080	.1852	
								0155	.079	.1919	
Continued on next page											
Watershed conditions: Desert grassland range; drainage area includes watersheds 63.008 and 63.011.											

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696.

Watershed conditions: Desert grassland range; drainage area includes watersheds 63.008 and 63.011.

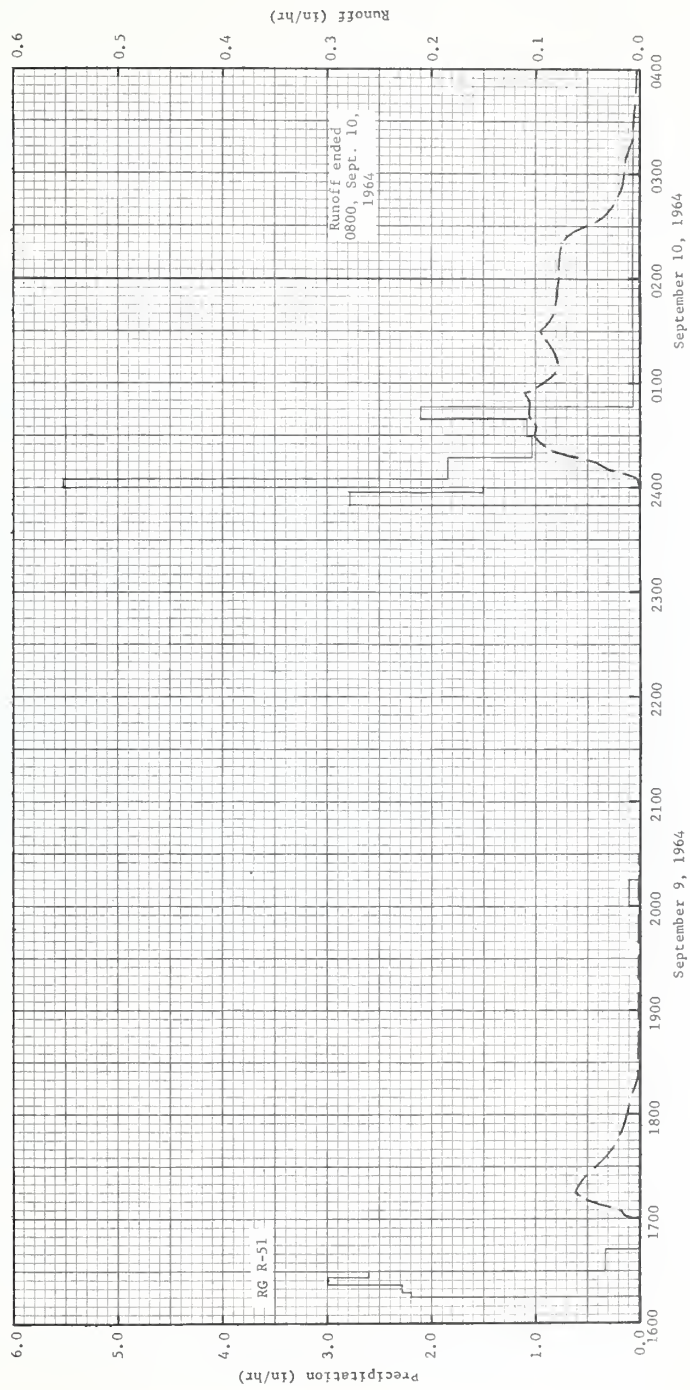
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696.

1964			SELECTED RUNOFF EVENTS				TOMBSTONE, ARIZONA		WATERSHED 63.006		63.06	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
Event of September 9-10, 1964—Continued												
							9-10	0200	.078	.1984		
								0205	.078	.2049		
								0210	.078	.2114		
								0215	.077	.2179		
								0220	.075	.2242		
								0225	.068	.2302		
								0230	.050	.2351		
								0233	.038	.2373		
								0235	.034	.2385		
								0240	.027	.2410		
								0245	.022	.2431		
								0250	.018	.2447		
								0255	.015	.2461		
								0300	.014	.2474		
								0310	.012	.2495		
								0320	.005	.2510		
								0330	.004	.2517		
								0340	.003	.2523		
								0350	.002	.2528		
								0400	.002	.2531		
								0415	.002	.2536		
								0430	.002	.2540		
								0500	.001	.2547		
								0530	.001	.2553		
								0600	.001	.2557		
								0630	.000	.2560		
								0700	.000	.2562		
								0730	.000	.2562		
								0800	.000	.2563		
								0830	.000	.2563		
								0900	.000	.2563		
								0930	.000	.2563		
								1000	.000	.2563		
								1015	.000	.2563		
Watershed conditions: Desert grassland range; drainage area includes watersheds 63.008 and 63.011.												
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696.												

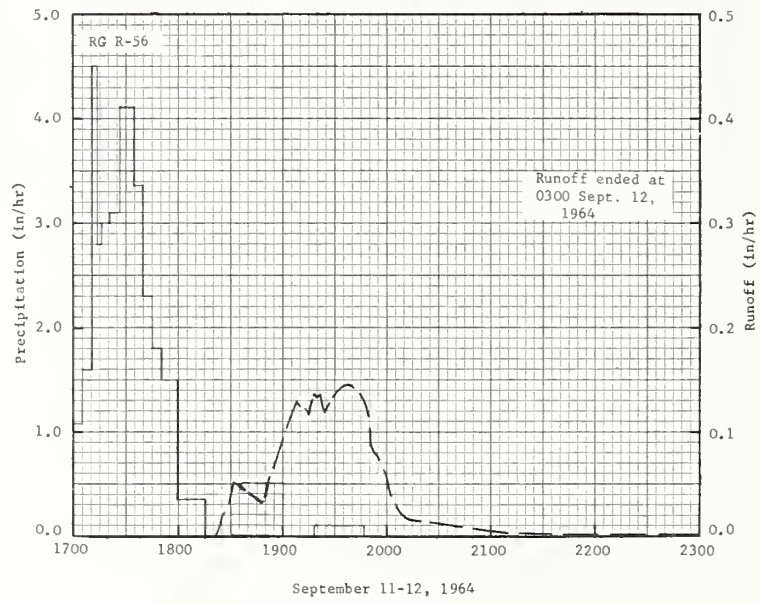
1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.006			63.06
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 11, 1964 ^{1/}										
8-12	RG R-56 .05		9-11	RG	R-56		9-11			
8-19	.08			1700	0.00	0.00		1822	.000	.0000
8-20	.20			1705	1.08	0.09		1823	.003	.0000
8-25	.05			1711	1.60	0.25		1824	.015	.0002
				1713	4.50	0.40		1825	.018	.0004
8-27	.49	.0004		1716	2.80	0.54		1828	.028	.0016
9-6	.29			1721	3.00	0.79		1830	.038	.0027
9-8	.92	.0600		1727	3.10	1.10		1831	.048	.0034
9-9	.85	.0384		1734	4.11	1.58		1832	.052	.0042
9-10	1.10	.2179		1739	3.36	1.86		1835	.049	.0068
				1745	2.30	2.09		1840	.041	.0105
				1751	1.80	2.27		1842	.038	.0118
				1759	1.50	2.47		1845	.034	.0136
				1816	0.35	2.57		1848	.031	.0153
				1918	0.00	2.57		1850	.038	.0165
				1947	0.10	2.62		1851	.048	.0172
								1852	.053	.0180
								1855	.065	.0209
								1857	.077	.0233
								1858	.083	.0247
								1900	.092	.0276
								1905	.116	.0362
								1908	.129	.0424
								1910	.126	.0466
								1913	.123	.0529
								1915	.117	.0569
								1917	.128	.0610
								1918	.135	.0632
								1920	.132	.0676
								1922	.135	.0721
								1924	.119	.0763
								1925	.122	.0783
								1927	.128	.0825
								1930	.136	.0891
								1935	.144	.1007
								1937	.146	.1056
								1938	.146	.1080
								1940	.144	.1128
								1945	.136	.1245
								1950	.104	.1345
							9-11	1952	.083	.1376
								1955	.076	.1416
								2000	.053	.1469
								2003	.038	.1492
								2005	.030	.1503
								2010	.019	.1524
								2015	.015	.1538
								2018	.015	.1546
								2020	.014	.1551
								2025	.013	.1562
								2030	.012	.1572
								2040	.009	.1590
								2050	.007	.1603
								2100	.003	.1612
								2110	.002	.1616
								2120	.002	.1619
								2130	.002	.1623
								2200	.001	.1631
								2230	.001	.1637
								2300	.001	.1642
							9-12	2400	.000	.1648
								0100	.000	.1651
								0200	.000	.1653
								0300	.000	.1654
								0400	.000	.1654
								0500	.000	.1654
								0600	.000	.1654
								0700	.000	.1654

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 23,696, ^{1/} ISO-HYETAL MAP ON P. 63.1-11.





TOMBSTONE, ARIZONA WATERSHED 63.006



TOMBSTONE, ARIZONA WATERSHED 63.006

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED 63.008

LOCATION: Cochise County, Ariz., 1½ miles northeast of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 3,830 acres (5.98 sq. miles)

SLOPES:	Slope - Percent $\frac{1}{4}$	0-3	3-10	10-20	20-35
	Percent of area	4	56	28	12

$\frac{1}{4}$ Estimated

SOILS: Not available

EROSION:	Erosion Class	1	2
	Percent of area	98	2

LAND CAPABILITY:	Class	VI
	Percent of area	100

GEOLOGY: One hundred percent of the subwatershed consists of Quaternary and Tertiary alluvium of the Tombstone pediment. The alluvium is made up of permeable lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerate are recognized beneath the recent alluvium of the Tombstone pediment. A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably considerably older than that surface, and an older Tertiary conglomerate lying unconformably beneath that. These conglomerates are known to persist to depths exceeding 1,200 feet. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of the unit are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. The southeast tip and fluvial outlet of the watershed is underlain by the remnant of a highly fractured intrusive basalt plug. The regional watertable is about 425 feet deep.

Stratigraphy and Hydrogeology of Walnut Gulch Subwatershed 63.008

System	Formation and percent of area	Description
Quaternary & Tertiary	Recent alluvium 99%	Gravel, sand, and clay.
	Younger conglomerate < 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Older conglomerate < 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Basalt < 1%	Intrusive olivine basalt plug, secondary calcite vein filling.

Source of data: General Geology of Central Cochise County, Arizona, by James Gilluly, U. S. Geological Survey, Professional Paper 281, 1956, and extended field studies by project staff.

SURFACE DRAINAGE: Good, length of principal waterway is 8.0 miles with 2 major tributaries; a natural watershed with surface flow in well defined water courses; includes gaged watershed 63.011.

CHARACTER OF FLOW: Ephemeral

INSTRUMENTATION: Precipitation: Measured by 11 24-hour weighing rain gages. Runoff: Critical depth flume (precalibrated), AD-35 analog strip chart water level recorder.

WATERSHED CONDITIONS: (Includes Watershed 63.011) Vegetation cover: Approximately one-third of the area is dominated by desert shrubs (whitethorn, creosotebush, tarbush) with a crown spread of approximately 30 percent and an understory of grasses with less than 1 percent basal area. The remaining two-thirds of the area is dominated by grasses (black grama, curly mesquite grass, sideoats grama), with a basal area of about 2.5 percent, interspersed by desert shrubs with a crown spread of about 5 percent.

GENERALLY REPRESENTS: Desert grassland ranges in the Southeastern Arizona Basin and Rangeland Resources Area (D-41).

MONTHLY PRECIPITATION AND RUNOFF (inches)							TOMBSTONE, ARIZONA WATERSHED 63.008 AREA - 3830 ACRES (5.98 SQ. MILES)							63.08
MONTH YEAR		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1963	P 1/2	.12	.36	.02	.11	.00	.00	2.51	4.00	.69	.33	1.37	.26	9.77
	Q							.03	.25	.01	.00	.00	.00	
1964	P 1/2	.19	.03	.41	.28	.00	.02	4.93	2.20	4.54	.54	.77	.28	14.19
	Q	.00	.00	.00	.00	.00	.00	.35	.12	.45	.00	.00	.00	.92
STA AVG	P 2/3	.15	.20	.21	.20	.00	.01	3.72	3.10	2.62	.44	1.07	.27	11.99
	Q	.00	.00	.00	.00	.00	.00	.19	.19	.23	.00	.00	.00	.61
MEAN	P 2/3													
68 YR	P 2/3	.84	.78	.62	.28	.18	.50	3.64	3.48	1.53	.68	.64	.85	14.02

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	8-19	.16	8-19	.11	8-19	.13	8-19	.14	8-19	.14	8-19	.14	8-19	.14	8-19	.14
1964	7-22	1.11	7-22	.31	7-22	.32	7-22	.34	7-22	.34	7-22	.34	7-22	.34	7-22	.34

MAXIMUMS FOR PERIOD OF RECORD																
1963 TO 1964	7-22 1964	1.11	7-22 1964	.31	7-22 1964	.32	7-22 1964	.34	7-22 1964	.34	7-22 1964	.34	7-22 1964	.34	7-22 1964	.34

Notes: 1/ Monthly precipitation is arithmetic average of 8 rain gages on watershed. 2/ Precipitation record began January 1, 1963; runoff record began July 31, 1963 when 8000 cfs maximum capacity flume was instrumented. 3/ Mean P based on 68-yr (1897-1964) U.S. Weather Bureau record period at Tombstone, Ariz.

1963 SELECTED RUNOFF EVENTS						TOMBSTONE, ARIZONA WATERSHED 63.008						63.08	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF						
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)			
Event of August 19, 1963 4/													
	RG R-52		8-19	RG	R-52		8-19						
7-19	.03	.0000		0900	0.00	0.00		0930	.000	.0000			
7-22	.35	.0000		0908	3.38	0.45		0932	.003	.0000			
7-24	.11	.0000		0915	3.26	0.83		0934	.005	.0002			
7-25	.17	.0000		0930	1.64	1.24		0936	.006	.0003			
7-26	.12	.0000		0938	1.05	1.38		0938	.006	.0005			
7-27	.04	.0000		1002	0.23	1.47		0940	.008	.0008			
7-28	.15	.0000						0942	.030	.0014			
7-29	.41	.0000						0944	.044	.0026			
7-31	.39	.0371						0946	.050	.0042			
8-2	.18	.0032						0956	.052	.0127			
8-8	.03	.0000						1000	.056	.0162			
8-10	.35	.0363						1005	.074	.0216			
								1010	.075	.0278			
								1015	.091	.0348			
								1020	.120	.0435			
								1025	.142	.0545			
								1030	.148	.0666			
								1035	.156	.0793			
								1040	.133	.0913			
								1045	.094	.1007			
								1050	.072	.1076			
								1055	.050	.1127			
								1100	.039	.1165			
								1105	.030	.1193			
								1110	.023	.1215			
								1115	.020	.1233			
								1120	.019	.1250			
								1130	.015	.1277			
								1140	.011	.1298			
								1150	.008	.1314			
								1200	.006	.1327			
								1215	.004	.1340			
								1230	.002	.1348			
								1245	.001	.1352			
								1300	.000	.1354			
								1315	.000	.1355			
								1330	.000	.1355			
								1400	.000	.1355			
								1600	.000	.1355			

Continued on next page

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3,861.9. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-61, USDA MISC. PUB.994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS SEE 1963 USDA MISC. PUB.1164, P.63.1-2 AND P.63.1-3. 4/ ISOHYETAL MAP ON P.63.6-9 USDA MISC. PUB.1164.

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.008				63.08	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
			Event of August 19, 1963—Continued									

1964			SELECTED RUNOFF EVENTS				TOMBSTONE, ARIZONA		WATERSHED 63.008		63.08	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)		
<p>Watershed conditions: (Includes Watershed 63.011) Vegetation cover: Approximately one-third of the area is dominated by desert shrubs (whitethorn, creosotebush, tarbush) with a crown spread of approximately 30 percent and an understory of grasses with less than 1 percent basal area. The remaining two-thirds of the area is dominated by grasses (black grama, curly mesquite grass, sideoats grama), with a basal area of about 2.5 percent, interspersed by desert shrubs with a crown spread of about 5 percent.</p>			Event of July 22, 1964 Continued				7-22	1940	.322	.2810		
									1942	.229	.2902	
									1944	.158	.2967	
									1946	.111	.3012	
									1948	.083	.3044	
									1950	.058	.3068	
									1952	.034	.3083	
									1955	.020	.3097	
									2000	.016	.3111	
									2010	.015E	.3137E	
									2020	.013E	.3160E	
									2030	.011E	.3180E	
									2040	.010E	.3198E	
									2050	.009E	.3213E	
									2056	.008E	.3221E	
									2100	.010E	.3227E	
									2105	.015E	.3238E	
									2110	.018E	.3252E	
									2115	.017E	.3266E	
									2120	.015E	.3279E	
									2130	.011E	.3301E	
									2140	.008E	.3317E	
									2150	.006E	.3330E	
									2200	.005E	.3338E	
									2215	.003E	.3347E	
									2230	.001E	.3352E	
									2245	.001E	.3355E	
									2300	.000E	.3356E	
									2330	.000E	.3356E	
			Event of September 9-10, 1964 1/				9-9	1605	.000	.0000		
8-9	RG R-32 .04	.0000	9-9	RG	R-32	.00		1610	.000	.0000		
8-16	.12	.0000		1602	2.40	.08		1614	.000	.0000		
8-27	.58	.0304		1605	1.20	.14		1616	.000	.0000		
9-4	.32	.0000		1608	1.00	.19		1623	.000	.0001		
9-6	.18	.0000		1612	.90	.25		1630	.000	.0001		
9-8	.76	.0000		1619	.43	.30		1633	.002	.0001		
9-9	2/.08	.0000		1630	.11	.32		1636	.002	.0002		
				1645				1645	.000	.0004		
			9-9	2328	.00	.00		1647	.002	.0004		
				2335	.94	.11		1650	.002	.0005		
				2343	1.57	.32		1655	.003	.0007		
				2346	3.60	.50		1656	.004	.0008		
				2353	2.74	.82		1658	.083	.0022		
				2357	2.25	.97		1659	.146	.0041		
			9-10	2406	.20	1.00		1700	.178	.0068		
				0035	.02	1.01		1705	.185	.0220		
				0110	.14	1.09		1710	.172	.0368		
				0146	.08	1.14		1715	.165	.0509		
								1720	.143	.0637		
								1725	.117	.0745		
								1730	.091	.0832		
								1735	.063	.0896		
								1740	.048	.0942		
								1745	.030	.0975		
								1750	.021	.0996		
								1755	.018	.1012		
								1800	.016	.1027		
								1810	.014	.1052		
								1820	.010	.1073		
			Continued on next page				1830	.007	.1088			
							1840	.005	.1098			
							1850	.003	.1105			
							1900	.002	.1109			
							1905	.002	.1111			

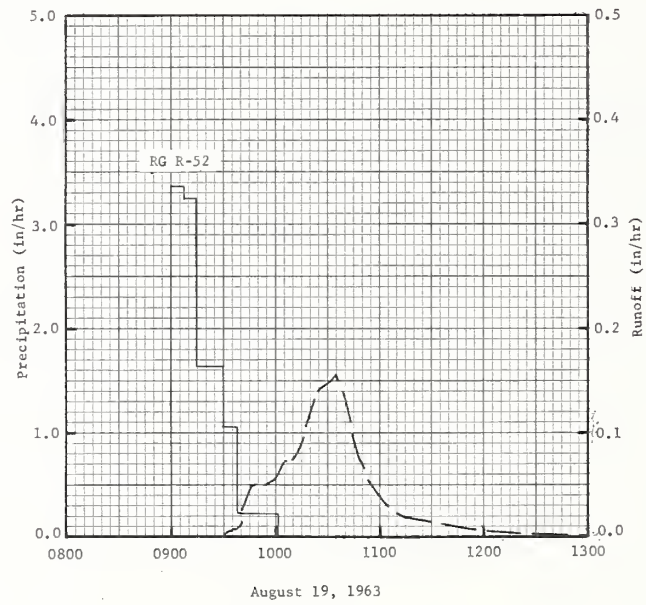
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3,861.9. 1/ ISO-HYETAL MAP ON P. 63.1-10. 2/ RAIN ENDED AT 1200.

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3,861.9. 1/ ISO-HYETAL MAP ON P. 63.1-10. 2/ RAIN ENDED AT 1200.

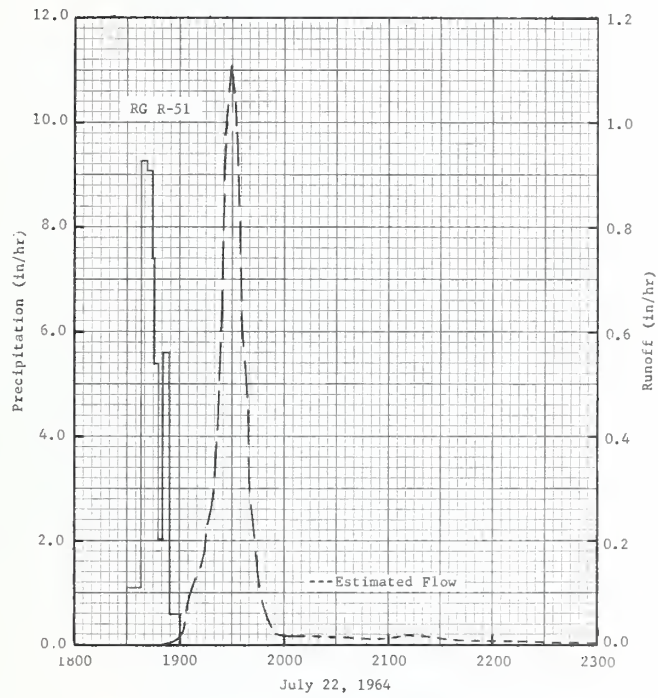
1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA				WATERSHED 63.008		63.08	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 9-10, 1964—Continued							9-9	1915	.003	.1115
								1930	.001	.1119
								1945	.000	.1121
								2000	.000	.1122
								2030	.000	.1122
								2100	.000	.1122
								2200	.000	.1122
								2300	.000	.1122
								2356	.000	.1122
								2357	.058	.1127
							9-10	2400	.192E	.1189E
								0006	.172E	.1279E
								0009	.091E	.1345E
								0012	.058	.1382
								0015	.040	.1406
								0018	.030	.1424
								0021	.023	.1437
								0024	.020	.1448
								0030	.020	.1468
								0040	.019	.1500
								0045	.019	.1516
								0050	.020	.1532
								0054	.019	.1545
								0057	.022	.1555
								0101	.019	.1569
								0110	.019	.1598
								0120	.019	.1630
								0130	.019	.1661
								0140	.019	.1692
								0150	.016	.1721
								0200	.015E	.1748E
								0215	.010E	.1779E
								0230	.007E	.1801E
								0300	.003E	.1826E
								0400	.000E	.1845E
								0500	.000E	.1847E
								0600	.000E	.1847E
								0800	.000E	.1847E
								1200	.000E	.1847E
Event of September 11, 1964 ^{1/}										
	RG R-51		9-11	RG	R-51		9-11	1814	.000	.0000
8-13	.06	.0000		1710	.00	.00		1815	.002	.0000
8-20	.13	.0000		1725	.32	.08		1816	.245	.0021
8-25	.08	.0000		1731	1.70	.25		1817	.300	.0066
8-26	.05	.0000		1740	2.33	.60				
8-27	.66	.0304		1814	.35	.80		1820	.496E	.0265E
9-6	.03	.0000		1824	.84	.94		1824	.361E	.0551E
9-8	.88	.0000		2000	.05	1.02		1826	.345E	.0669E
9-9	1.22	.1189E						1829	.306	.0831
9-10	1.68	.0658E						1832	.262	.0973
								1835	.207	.1090
								1838	.158	.1182
								1841	.068	.1238
								1844	.040	.1265
								1850	.020	.1295
								1855	.014	.1309
								1915	.014	.1356
								1930	.010	.1386
								1945	.008	.1408
								2000	.006	.1425
								2030	.003	.1447
								2100	.001	.1458
								2130	.000	.1461
								2200	.000	.1461

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3,861.9. ^{1/} ISOHYETAL MAP ON P. 63.1-11.

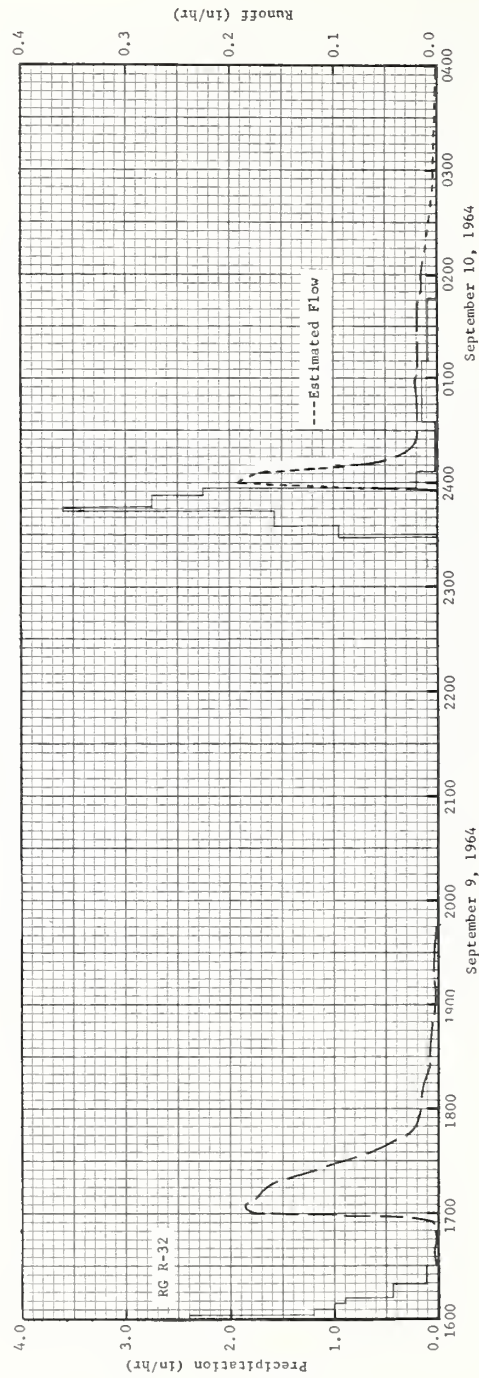
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 3,861.9. ^{1/} ISORHYETAL MAP ON P. 63.1-11.



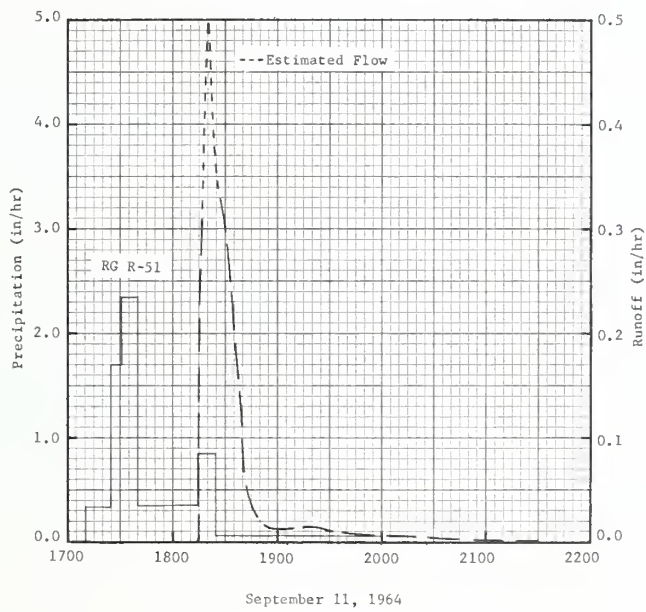
TOMBSTONE, ARIZONA WATERSHED 63.008



TOMBSTONE, ARIZONA WATERSHED 63.008



TOMBSTONE, ARIZONA WATERSHED 63.008



TOMBSTONE, ARIZONA WATERSHED 63.008

TOMBSTONE, ARIZONA WALNUT GULCH WATERSHED 63,011

LOCATION: Cochise County, Ariz.; 4 1/3 miles northeast of Tombstone; Walnut Gulch, San Pedro River, Gila River, Colorado River Basin.

AREA: 2,035 acres (3.18 sq. miles)

<u>SLOPES:</u>	Slope - Percent	0-3	3-10	10-20	20-35
	Percent of area ^{1/}	4	52	28	16

^{1/} Estimated

SOILS: Not available

<u>EROSION:</u>	Erosion Class	1	2
	Percent of area	98	2

<u>LAND CAPABILITY:</u>	Class	VI
	Percent of area	100

GEOLOGY: One hundred percent of the subwatershed consists of Quaternary and Tertiary alluvium of the Tombstone pediment. The alluvium is made up of permeable lensed and interbedded sand, gravel, conglomerate, caliche conglomerate, and some clay. Two series of conglomerate are recognized beneath the recent alluvium of the Tombstone pediment. A younger conglomerate whose bedding is nearly conformable to the pediment surface and probably older than that surface, and an older Tertiary conglomerate lying unconformably beneath that. These conglomerates are known to persist to depths exceeding 1,200 feet. Topographic expression of the alluvium is that of low undulating hills dissected by present stream channels. Caliche conglomerates of this unit are fairly resistant to erosion and form steep cliffs of low relief in some of the present stream channels. The regional watertable is about 425 feet deep.

Stratigraphy and Hydrogeology of Walnut Gulch Subwatershed 63,011

System	Formation and percent of area	Description
Quaternary & Tertiary	Recent alluvium 99%	Gravel, sand, and clay.
	Younger conglomerate < 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.
	Older conglomerate < 1%	Gravel, sand, conglomerate, caliche conglomerate, and clay, some boulders.

Source of data: General Geology of Central Cochise County, Arizona, by James Gilluly, U. S. Geological Survey, Professional Paper 281, 1956 and extended field studies by project staff.

SURFACE DRAINAGE: Good, length of principal waterway is 4.0 miles with 2 major tributaries; a natural watershed with surface flow in well defined water courses.

CHARACTER OF FLOW: Ephemeral.

INSTRUMENTATION: Precipitation: Measured by 5 24-hour weighing rain gages. Runoff: Critical depth flume (precalibrated) AD-35 analog strip chart water level recorder.

WATERSHED CONDITIONS: Vegetation cover: Approximately 20 percent of the area dominated by desert shrubs (whitethorn, creosotebush, tarbush) with a crown spread of approximately 30 percent cover and an understory of grasses with basal area of less than 1 percent. The remaining 80 percent of the area supports a grass cover (black grama, curly mesquite grass, sideoats grama) with a basal cover of about 2.5 percent interspersed with desert shrubs averaging less than 5 percent crown cover.

GENERALLY REPRESENTS: Desert grassland ranges in the Southeastern Arizona Basin and Rangeland resources area (D-41).

MONTHLY PRECIPITATION AND RUNOFF (inches)						TOMBSTONE, ARIZONA WATERSHED 63.011 AREA - 2035 ACRES (3.18 SQ. MILES)								63.11			
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL				
1963 P ₁ / Q	.16	.37	.03	.12	.00	.00	2.78 .01	3.64 .31	.64 .00	.36 .00	1.41 .00	.26 .00	9.77				
1964 P ₁ / Q	.24 .00	.02 .00	.33 .00	.26 .00	.00 .00	.02 .00	5.16 .79	2.36 .27	5.50 1.71	.59 .00	.69 .00	.35 .00	15.54 2.99				
STA AVG P ₂ / Q	.20 .00	.20 .00	.18 .00	.20 .00	.00 .00	.01 .00	3.97 .50	3.00 .30	3.07 .85	.47 .00	1.05 .00	.30 .00	12.65 1.65				
MEAN P ₃ / 68 YR	.84	.78	.62	.28	.18	.50	3.64	3.48	1.53	.68	.64	.85	14.02				
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																	
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL														
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS		
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	
1964	7-22	2.16	7-22	.91	7-22	.93	7-22	.94	9-9	.97	9-9	.97	9-10	1.46	9-8	1.71	
MAXIMUMS FOR PERIOD OF RECORD																	
1963 TO 1964	7-22 1964	2.16	7-22 1964	.91	7-22 1964	.93	7-22 1964	.94	9-9 1964	.97	9-9 1964	.97	9-10 1964	1.46	9-8 1964	1.71	
Notes: 1/ Monthly precipitation is arithmetic average of 4 rain gages on watershed. 2/ Precipitation record began January 1, 1963; runoff record began July 9, 1963 with the completion of the 6000-cfs maximum-capacity flume. 3/ Mean P based on 68-yr (1897-1964) U.S. Weather Bureau record period at Tombstone, Ariz.																	
1963 SELECTED RUNOFF EVENTS						TOMBSTONE, ARIZONA WATERSHED 63.011											63.11
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF										
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)							
Event of August 19, 1963 4/																	
	RG R-52		8-19	RG	R-52		8-19										
7-19	.03	.0000		0900	0.00	0.00		0920	.000	.0000							
7-22	.35	.0000		0908	3.38	0.45		0925	.002	.0001							
7-24	.11	.0000		0915	3.26	0.83		0930	.021	.0011							
7-25	.17	.0000		0930	1.64	1.24		0935	.206	.0105							
7-26	.12	.0000		0938	1.05	1.38		0940	.292	.0313							
7-27	.04	.0000		1002	0.23	1.47		0945	.349	.0580							
7-28	.15	.0000						0950	.383	.0885							
7-29	.41	.0000						0952	.403	.1016							
7-31	.39	.0106						0955	.376	.1210							
8-2	.18	.0274						1000	.302	.1493							
8-8	.03	.0000						1005	.196	.1700							
8-10	.35	.0029						1010	.112	.1829							
								1015	.062	.1901							
								1020	.039	.1943							
								1025	.030	.1971							
								1030	.026	.1994							
								1040	.020	.2033							
								1050	.016	.2062							
								1100	.012	.2085							
								1110	.009	.2103							
								1120	.008	.2117							
								1130	.006	.2128							
								1145	.004	.2141							
								1200	.003	.2149							
								1230	.001	.2159							
								1300	.000	.2163							
								1330	.000	.2165							
								1400	.000	.2165							
								1430	.000	.2165							
								1515	.000	.2165							
Watershed conditions: Vegetation cover: Approximately 20 percent of the area dominated by desert shrubs (whitethorn, creosotebush, tarbush) with a crown spread of approximately 30 percent cover and an understory of grasses with basal area of less than 1 percent. The remaining 80 percent of the area supports a grass cover (black grama, curly mesquite grass, sideoats grama) with a basal cover of about 2.5 percent interspersed with desert shrubs averaging less than 5 percent crown cover.																	
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2051.9. FOR TOPOGRAPHIC MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES 1960-61, USDA MISC. PUB. 994, P. 63.1-2. FOR GEOLOGIC AND VEGETATION MAPS, SEE 1963 USDA MISC. PUB. 1164, P. 63.1-2 AND 63.1-3. 4/ ISOHYETAL MAP ON P. 63.6-9, USDA MISC. PUB. 1164.																	

1964 SELECTED RUNOFF EVENTS			TOMBSTONE, ARIZONA WATERSHED 63.011 63.11							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of July 22, 1964 1/										
	RG R-56		7-22	RG	R-56		7-22			
7-7	.05	.0000		1815	.00	.00		1835	.000	.0000
7-8	.03	.0000		1819	5.25	.35		1837	.000	.0000
7-12	.46	.0050		1822	2.40	.47		1840	.602	.0001
7-13	.10	.0004		1827	6.36	1.00		1842	.186	.0032
7-17	.08	.0000		1830	12.40	1.62		1845	.630	.0236
7-18	.08	T		1845	1.76	2.06		1847	.874	.0487
7-20	.16	.0001						1849	1.198	.0832
7-21	.16	.0000						1852	1.572	.1524
								1855	1.961	.2408
								1858	2.125	.3429
								1900	2.155	.4142
								1901	2.061	.4494
								1903	1.961	.5164
								1905	1.804	.5791
								1908	1.572	.6636
								1910	1.198	.7097
								1913	.874	.7615
								1917	.630	.8117
								1920	.503	.8400
								1925	.313	.8740
								1928	.186	.8865
								1930	.141	.8919
								1935	.085	.9013
								1940	.057	.9072
								1945	.049	.9116
								1948	.047	.9140
								1950	.049	.9156
								1955	.043	.9194
								2000	.037	.9227
								2005	.031	.9256
								2015	.021	.9299
								2030	.013E	.9342E
								2045	.009E	.9370E
								2100	.006E	.9389E
								2130	.002E	.9410E
								2200	.000E	.9416E
								2230	.000E	.9418E
Event of September 9-10, 1964 2/										
	RG R-51		9-9	RG	R-51		9-9			
8-9	.07	.0000		1615	.00	.00		1613	.000	.0000
8-13	.06	.0000		1618	2.20	.11		1615	.002	.0000
8-20	.13	.0000		1623	2.28	.30		1617	.006	.0002
8-25	.08	.0000		1627	3.00	.50		1619	.078	.0016
8-26	.05	.0000		1630	2.60	.63		1621	.250	.0070
8-27	.66	.0304		1643	.32	.70		1623	.302	.0162
9-6	.03	.0000		2000	.00	.00		1625	.359	.0273
9-8	.88	.0000		2115	.10	.10		1627	.383	.0396
				2350	.00	.00		1629	.397	.0526
				2358	2.77	.37		1630	.401	.0593
				2400	1.50	.42		1633	.397	.0793
			9-10	0005	5.52	.88		1635	.377	.0922
				0018	1.85	1.28		1637	.324	.1039
				0029	1.04	1.47		1640	.313	.1198
				0039	1.08	1.65		1643	.324	.1357
				0047	2.10	1.93		1645	.331	.1466
				0333	.06	2.10		1647	.313	.1573
								1649	.272	.1671
								1651	.177	.1746
Continued on next page										

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2051.9. 1/ ISOHYETAL MAP ON P. 63.1-9. 2/ ISOHYETAL MAP ON P. 63.1-10.

1964			SELECTED RUNOFF EVENTS				TOMBSTONE, ARIZONA				WATERSHED 63.011		63.11	
ANTECEDENT CONOITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)				
			Event of September 9-10, 1964				(Continued)							
							9- 9	1654	.129	.1822				
								1657	.087	.1876				
								1700	.050	.1911				
								1705	.022	.1941				
								1710	.014	.1956				
								1715	.010E	.1966E				
								1720	.007E	.1973E				
								1730	.003E	.1981E				
								1745	.001E	.1986E				
								1800	.000E	.1988E				
								2345	.000E	.1989E				
								2353	.006	.1993				
								2355	.026	.1998				
								2357	.250	.2044				
								2359	.282	.2133				
							9-10	2400	.302	.2182				
								0005	.368	.2461				
								0010	.431	.2794				
								0012	.493	.2948				
								0014	.565	.3124				
								0016	.630	.3323				
								0018	.662	.3539				
								0020	.685	.3763				
								0022	.707	.3995				
								0024	.723	.4233				
								0026	.680	.4467				
								0028	.630	.4686				
								0030	.608	.4892				
								0035	.582	.5388				
								0037	.608	.5586				
								0039	.640	.5794				
								0041	.665	.6011				
								0043	.685	.6236				
								0044	.689	.6351				
								0045	.687	.6466				
								0047	.662	.6690				
								0049	.638	.6907				
								0051	.616	.7116				
								0053	.582	.7316				
								0055	.565	.7507				
								0100	.509	.7955				
								0105	.467	.8362				
								0110	.368	.8710				
								0115	.250	.8967				
								0120	.166	.9141				
								0125	.109	.9255				
								0130	.072	.9331				
								0135	.046	.9380				
								0140	.033	.9413				
								0145	.026	.9438				
								0150	.022	.9458				
								0153	.022	.9469				
								0158	.024	.9488				
								0202	.024	.9503				
								0205	.022E	.9515E				
								0210	.020E	.9532E				
								0220	.016E	.9563E				
								0230	.013E	.9587E				
								0245	.009E	.9614E				
								0300	.005E	.9632E				
								0315	.003E	.9643E				
								0330	.002E	.9650E				
								0345	.001E	.9653E				
								0400	.000E	.9654E				
								0600	.000E	.9656E				
<p>Watershed conditions: Vegetation cover: Approximately 20 percent of the area dominated by desert shrubs (whitethorn, creosotebrush, tarbrush) with a crown spread of approximately 30 percent cover and an understory of grasses with basal area of less than 1 percent. The remaining 80 percent of the area supports a grass cover (black grama, curly mesquite grass, sideoats grama) with a basal cover of about 2.5 percent interspersed with desert shrubs averaging less than 5 percent crown cover.</p>														

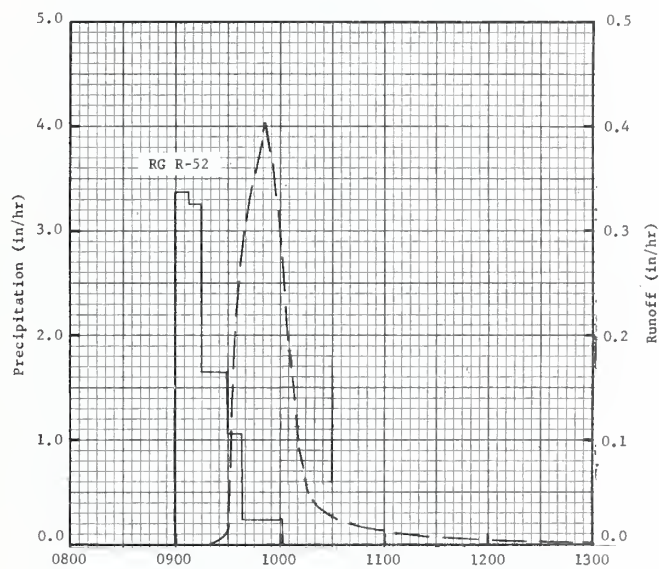
NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2,051.9.

NOTE: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2,051.9.

1964			SELECTED RUNOFF EVENTS				TOMBSTONE, ARIZONA				WATERSHED 63.011				63.11	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
	RG R-56		9-11	Event of September 11, 1964 1/												
8-12	.05	.0000		RG	R-56		9-11	1700	.000	.0000						
8-19	.08	.0000		1700	.00	.00		1725	.001	.0002						
8-20	.20	.0000		1705	1.08	.09		1726	.026	.0004						
8-25	.05	.0000		1711	1.60	.25		1727	.166	.0020						
				1713	4.50	.40										
8-27	.49	.0304		1716	2.80	.54		1728	.192	.0050						
9-6	.26	.0000		1721	3.00	.79		1730	.250	.0123						
9-8	.92	.0000		1727	3.10	1.10		1732	.387	.0229						
9-9	.85	.2182		1734	4.11	1.58		1734	.503	.0378						
9-10	1.10	.7474		1739	3.36	1.86		1736	.608	.0563						
				1745	2.30	2.09		1738	.652	.0773						
				1751	1.80	2.27		1740	.707	.0999						
				1759	1.50	2.47		1742	.776	.1246						
				1816	.35	2.57		1744	.815	.1511						
				1918	.00	2.57		1746	.833	.1786						
				1947	.10	2.62		1748	.815	.2061						
								1750	.765	.2324						
								1752	.718	.2571						
								1754	.662	.2801						
								1756	.608	.3013						
Watershed conditions: Vegetation cover: Approximately 20 percent of the area dominated by desert shrubs (whitethorn, creosotebush, tarbush) with a crown spread of approximately 30 percent cover and an understory of grasses with basal area of less than 1 percent. The remaining 80 percent of the area supports a grass cover (black grama, curly mesquite grass, sideoats grama) with a basal cover of about 2.5 percent interspersed with desert shrubs averaging less than 5 percent crown cover.																
								1758	.565	.3209						
								1800	.544	.3394						
								1805	.503	.3830						
								1810	.481	.4240						
								1815	.465	.4634						
								1820	.481	.5028						
								1824	.503	.5355						
								1826	.497	.5522						
								1830	.469	.5844						
								1833	.387	.6058						
								1836	.282	.6225						
								1839	.186	.6342						
								1842	.144	.6424						
								1845	.101	.6485						
								1850	.057	.6551						
								1855	.031	.6587						
								1857	.028	.6597						
								1900	.027	.6611						
								1902	.024	.6619						
								1903	.024	.6623						
								1906	.040	.6639						
								1907	.038	.6646						
								1910	.035	.6664						
								1913	.028	.6680						
								1915	.030	.6689						
								1918	.030	.6705						
								1922	.027	.6724						
								1923	.028	.6728						
								1926	.027	.6742						
								1930	.030	.6761						
								1931	.028	.6766						
								1934	.030	.6780						
								1940	.029	.6810						
								1945	.024	.6832						
								1950	.021	.6850						
								2000	.019	.6884						
								2030	.013E	.6964E						
								2100	.009E	.7021E						
								2130	.006E	.7059E						
								2200	.004E	.7083E						
								2230	.002E	.7097E						
								2300	.001E	.7105E						
								2400	.000E	.7112E						
							9-12	0100	.000E	.7114E						
								0500	.000E	.7115E						

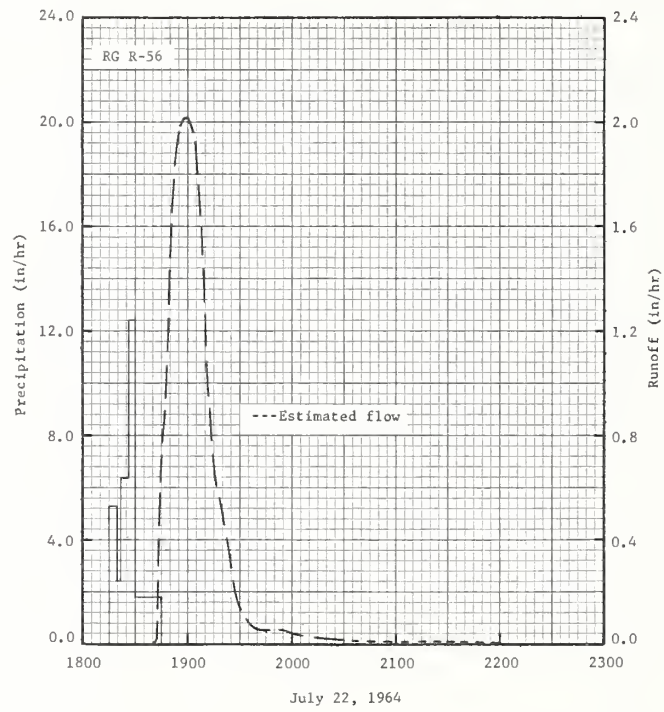
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2051.9. 1/ ISOHYETAL MAP ON P. 63.1-11.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 2051.9. 1/ ISOHYETAL MAP ON P. 63.1-11.

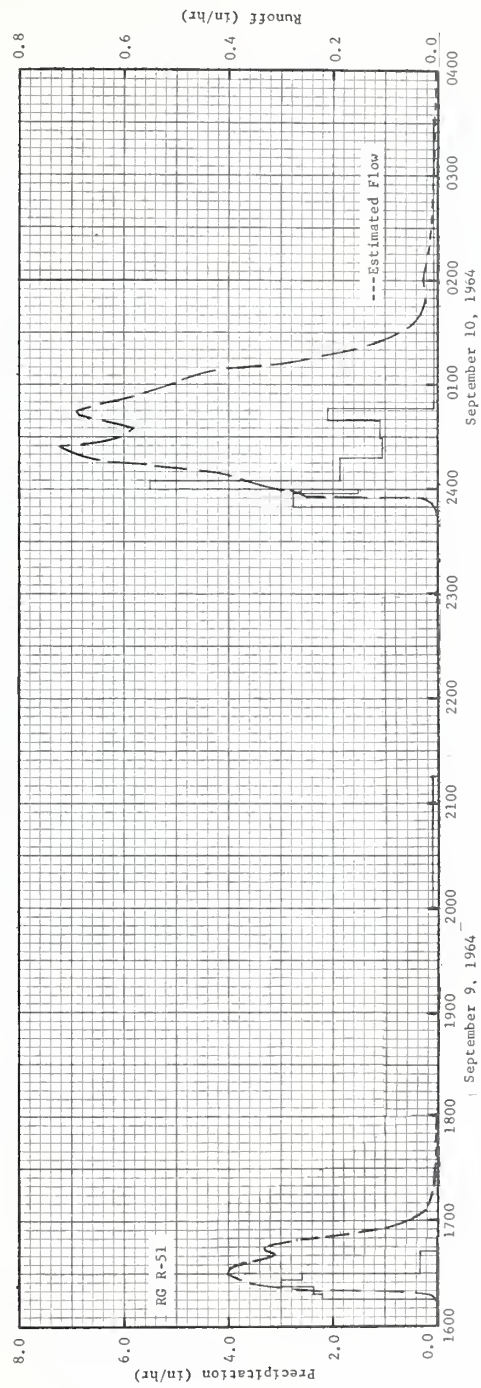


August 19, 1963

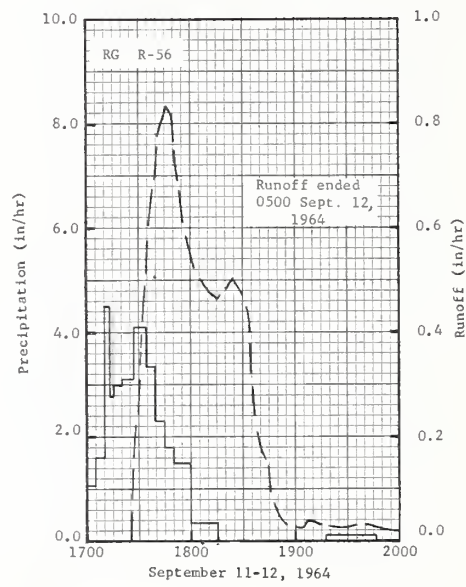
TOMBSTONE, ARIZONA WATERSHED 63.011



TOMBSTONE, ARIZONA WATERSHED 63.011



TOMBSTONE, ARIZONA WATERSHED 63.011



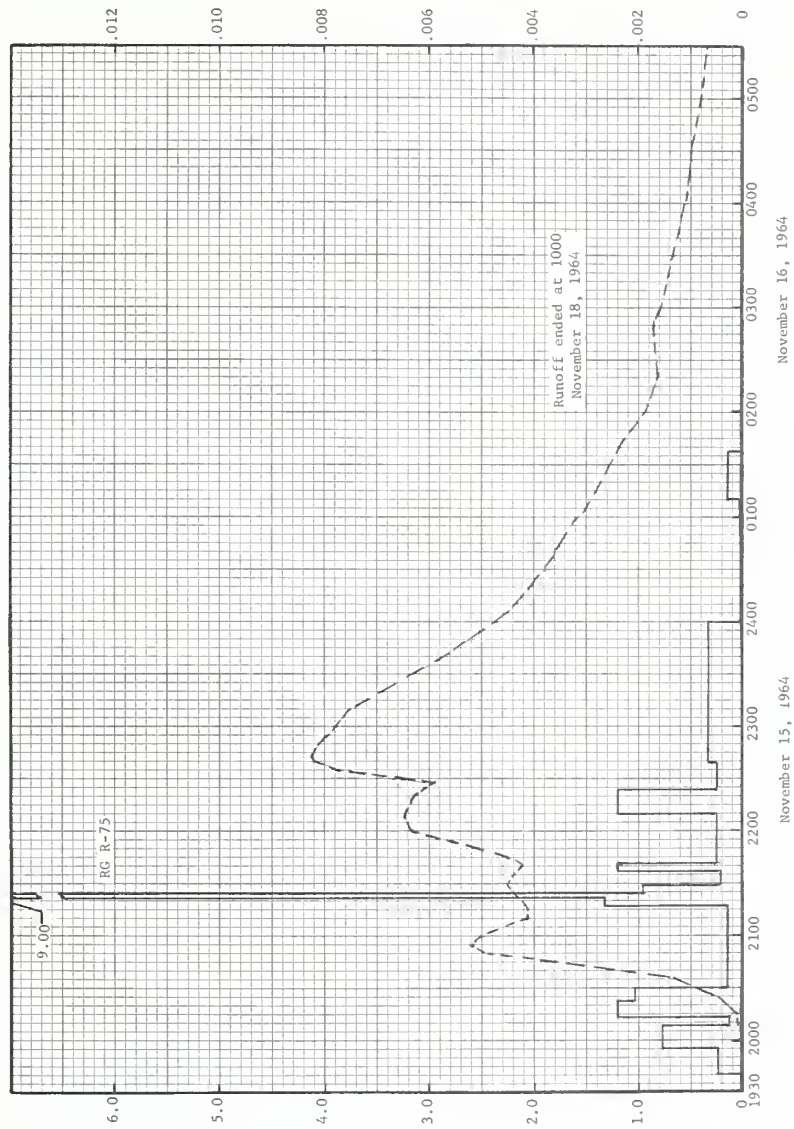
TOMBSTONE, ARIZONA WATERSHED 63.011

MONTHLY PRECIPITATION AND RUNOFF (inches)						SANTA ROSA, NEW MEXICO WATERSHED 64.001 AREA 42,880 ACRES (57 SQ. MILES)								64.01		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P1/ O	.00	.50	.01	T	.54	.60	.94	.38	1.44	.00	1.35	.18	5.94			
	.00	.00	.00	.00	.00	.00	T	T	T	.00	.03	.00	.03			
STA AVG P2/ (56-64) O	.18	.19	.44	.38	.87	1.37	2.69	1.62	1.01	.97	.29	.50	10.51			
	.00	.00	.00	.00	T	.19	.23	.05	.01	T	T	T	.48			
MEAN P3/ 57 YR	.36	.45	.62	.81	1.74	1.42	2.36	2.44	1.47	1.20	.39	.54	13.80			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-15	.0083	11-15	.0075	11-15	.0135	11-15	.0271	11-15	.0320	11-15	.0331	11-15	.0333	11-15	.0333
MAXIMUMS FOR PERIOD OF RECORD 4/																
19	TO															
19																
NOTES: Quality of runoff records: (Revision) Upon re-evaluation of accuracy, the runoff data are now considered to be very poor (±25% of actual), for the period 1955-64. Watershed conditions: Grazing land, about 75 percent of the area is grassland, vegetation consisting of blue grama, galleta, buffalo and ring muhly. Remaining 25 percent of area is pinon, juniper, and various shrubs, with some grasses interspersed. 1/ Monthly precipitation is arithmetic average of 61 rain gages. 2/ Precipitation and runoff records began in 1955, but the summer runoff record was incomplete that year, so 1955 is not included in averages. 3/ Mean P based on 57-yr (1908-64) U. S. Weather Bureau record period at Santa Rosa, N. Mex. 4/ Data are being re-evaluated, and when re-evaluation is complete, the revised data will be reported.																
1964 SELECTED RUNOFF EVENT						SANTA ROSA, NEW MEXICO WATERSHED 64.001								64.01		
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
			Event of November 15, 1964													
RG R-65 .00	.00	.00	11-15	RG	R-65		11-15									
				1940	.00	.00		2007	.0000	.00000						
				2004	.28	.11		2010	.0001	.00001						
				2015	.87	.27		2015	.0001	.00001						
				2022	.43	.32		2020	.0003	.00003						
				2027	1.80	.47		2025	.0005	.00006						
				2032	1.92	.63		2030	.0009	.00012						
				2040	.45	.69		2035	.0013	.00021						
				2052	.00	.69		2040	.0025	.00037						
				2123	.29	.84		2045	.0038	.00063						
				2127	1.50	.94		2050	.0048	.00099						
				2129	6.60	1.16		2055	.0052	.00141						
				2131	4.80	1.32		2100	.0050	.00183						
				2134	1.80	1.41		2110	.0041	.00259						
				2142	.45	1.47		2115	.0041	.00294						
				2145	2.00	1.57		2130	.0045	.00401						
				2205	.42	1.71		2140	.0042	.00473						
				2228	.39	1.86		2145	.0045	.00510						
				2338	.00	1.86		2150	.0051	.00550						
				2400	.30	1.97		2155	.0058	.00595						
RG R-75 .00	.00	.00	11-16	0115	.00	1.97	11-15	2200	.0063	.00645						
				0137	.14	2.02		2208	.0065	.00730						
			11-15	RG	R-75			2220	.0063	.00859						
				1940	.00	.00		2227	.0059	.00930						
				1955	.24	.06		2230	.0065	.00961						
				2008	.78	.23		2235	.0077	.01020						
				2013	.12	.24		2240	.0082	.01086						
				2023	1.20	.44		2242	.0083	.01114						
				2030	1.03	.56		2245	.0082	.01155						
				2117	.15	.68		2250	.0081	.01223						
				2122	1.32	.79		2255	.0079	.01290						
				2124	9.00	1.09		2300	.0078	.01355						
Watershed conditions: Grazing land, about 75% of the area is grassland, vegetation consisting of blue grama, galleta, buffalo and ring muhly. Remaining 25% of area is pinon, juniper, and various shrubs, with some grasses interspersed.																
Continued on next page																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 43,237. CONTOUR MAP OF WATERSHED NOT AVAILABLE. ISOHYETAL MAP ON PAGE 64.1-4.																

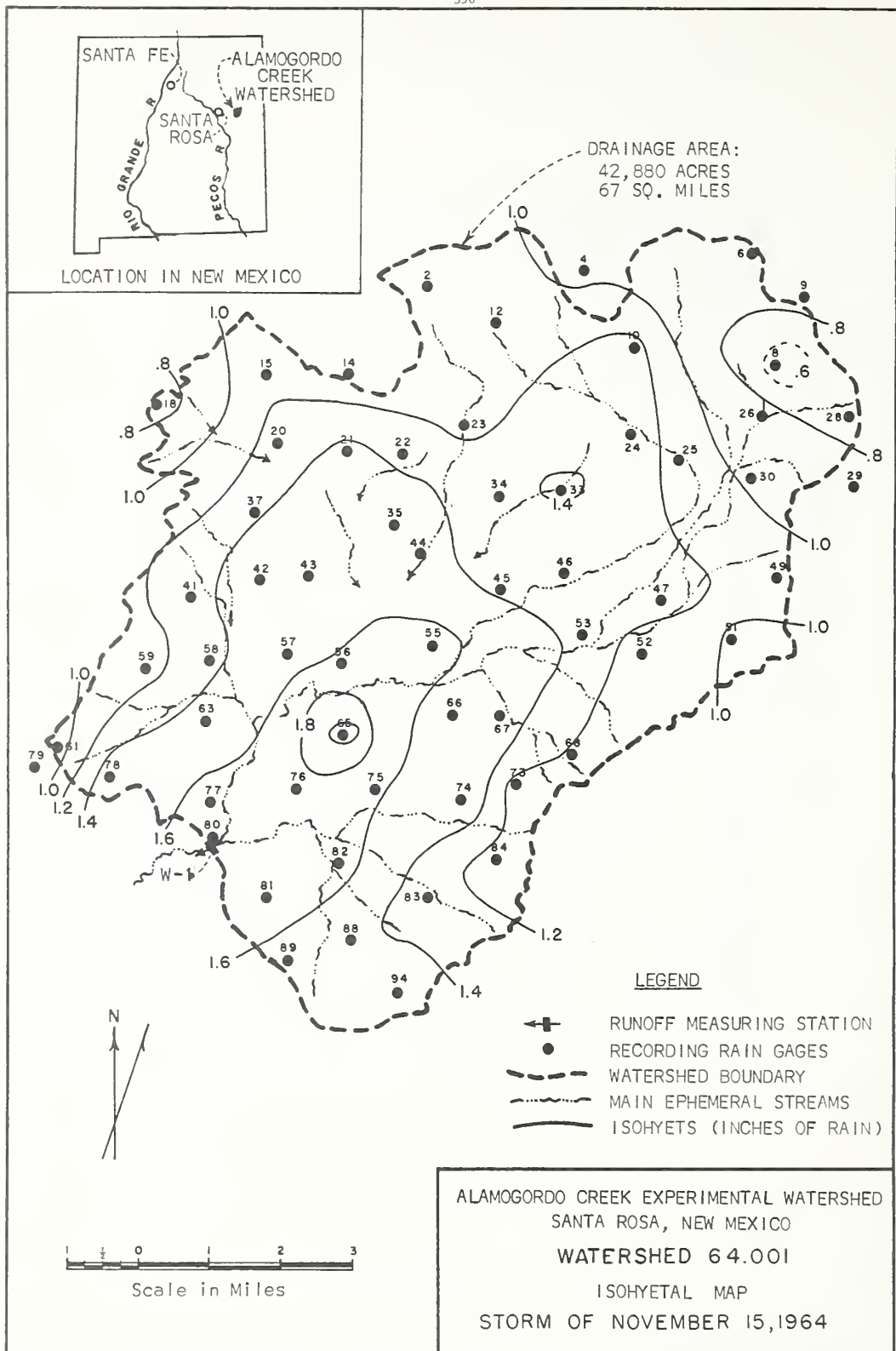
1964 SELECTED RUNOFF EVENT			SANTA ROSA, NEW MEXICO WATERSHED 64.001 64.01											
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF							
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)				
Watershed conditions: Grazing land, about 75% of the area is grassland, vegetation consisting of blue grama, galleta, buffalo and ring muhly. Remaining 25% of area is pinon, juniper, and various shrubs, with some grasses interspersed.			Event of November 15, 1964 Continued											
			11-15	2129	.96	1.17					11-15	2337	.0058	.01783
				2137	.22	1.20						2350	.0052	.01902
			11-16	2141	1.20	1.28					11-16	2400	.0047	.01984
				2210	.23	1.39						0010	.0043	.02059
				2223	1.20	1.46						0020	.0040	.02128
				2238	.23	1.49						0030	.0038	.02193
												0040	.0036	.02254
			11-16	2400	.32	1.54						0050	.0034	.02312
				0110	.02	1.56						0100	.0032	.02367
				0137	.14	1.61						0120	.0029	.02469
												0140	.0024	.02558
												0200	.0019	.02630
												0215	.0017	.02675
												0222	.0016	.02694
												0230	.0016	.02716
												0240	.0017	.02744
												0245	.0017	.02758
												0250	.0017	.02772
												0300	.0016	.02800
												0330	.0013	.02873
												0400	.0011	.02933
												0430	.0010	.02984
												0500	.0008	.03029
												0600	.0006	.03102
												0700	.0004	.03155
												0800	.0003	.03194
												1000	.0002	.03246
												1200	.0001	.03277
												1400	.0001	.03296
												1600	TE	.03305E
												1800	TE	.03311E
												2200	TE	.03320E
												2400	TE	.03323E
												0400	TE	.03327E
												1000	TE	.03330E
												1600	TE	.03331E
					11-18	1000	.0000	.03331E						

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 43,237.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 43,237.



SANTA ROSA, NEW MEXICO WATERSHED 64.001



MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-2 (AREA - 115 ACRES)						S7M-2	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 1/P	.26	.12	.18	.17	2.68	5.97	.66	1.64	.13	.44	.18	.45	12.88
2/Q	.00	.00	.02	.00	T	.35	T	.01	.00	.00	.00	.00	.38
STA AV 2/P	.20	.27	.28	.85	2.05	3.08	1.61	1.07	1.04	.57	.27	.23	11.52
(S8-64) Q	.01	.04	.14	T	.03	.10	.06	.01	.01	.00	T	T	.40
MEAN P 3/													
S7 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52
NOTES: Watershed conditions: 100% rangeland. Condition classes: excellent - 19%, good - 64%, fair - 17%. Degree of grazing: full. 1/ Precipitation from rain gage W-2A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on S7-yr. (1908-1964) U. S. Weather Bureau record period at Newell, S. D.													
GENERALLY REPRESENTS: (Revision) Pierre Shale Plains and Badlands land resource area (G-60) changed to Northern Rolling High Plains land resource area (G-58) and Northern Smooth High Plains land resource area (G-59).													
1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-2						S7M-2	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1						.01							.06
2					1.89		.02						.03
3													
4													.04
5				.11	.07								.02
6				.06	.03								
7						1.57							
8					.06	1.27		.26					
9						.09							
10					.04								
11	.02				.28	.49							
12													
13						.12							
14													
15			.03					.09			.05		.09
16										.14			.17
17						.44							
18						.06	.10						
19		.10				.02	.48	.07			.03		
20							.06						
21		.02				.43		1.10					
22			.09			.27			.03				.02
23	.07		.06										
24	.01												
25	.12								.10		.04		.02
26	.04												
27													
28					.06	.62					.03		
29					.20	.07		.12			.03		
30						.51							
31					.05					.30			
TOTAL	.26	.12	.18	.17	2.68	5.97	.66	1.64	.13	.44	.18	.45	12.88
STA AV	.20	.27	.28	.85	2.05	3.08	1.61	1.07	1.04	.57	.27	.23	11.52
NOTES: PRECIPITATION VALUES ARE FOR RAIN GAGE W-2A. ALL PRECIPITATION FROM JANUARY 1-APRIL 15 AND NOVEMBER 15-DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.2-4.													

1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-2 57M-2						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1					T							
2												
3												
4												
5												
6												
7						.24						
8						.02						
9						.01						
10												
11						.03						
12			.01									
13												
14												
15												
16												
17						T						
18							T					
19												
20												
21								.01				
22						T						
23												
24												
25												
26			.01									
27												
28						.02						
29												
30						.03						
31			T									
MEAN												
INCHES			.02		T	.35	T	.01				
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-5 (AREA - 46 ACRES)								57M-5
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1964 1/ P	.22	.27	.22	.38	3.38	4.59	.79	3.67	.03	.17	.27	.41	14.40	
2/ Q	.00	.00	.00	.00	.06	.36	.00	.96	.00	.00	.00	.00	1.38	
STA AV 2/ P	.20	.28	.40	.91	2.47	3.39	1.47	1.31	.83	.40	.19	.27	12.12	
(58-64) Q	T	.01	.10	.01	.06	.22	.04	.14	T	.00	.00	.00	.58	
MEAN P 3/														
57 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52	
NOTES: Watershed conditions: 100% rangeland. Condition classes: excellent - 7%, good - 93%. Degree of grazing: full. Production of cover: 2264 lbs./ac. of oven dry material. 1/ Precipitation from rain gage W-5A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 57-yr. (1908-1964) U. S. Weather Bureau record period at Newell, S. D.														
GENERALLY REPRESENTS: (Revision) Pierre Shale Plains and Badlands land resource area (G-60) changed to Northern Rolling High Plains land resource area (G-58) and Northern Smooth High Plains land resource area (G-59).														

1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-5								57M-5
OAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
1						.01							.04	
2					1.66		.05		.02				.06	
3				.01										
4				.07										
5			.03		.44			.43						
6				.11	.26									
7						.88		.53						
8					.08	1.30					.08		.04	
9		.07			.05	.12								
10							.30			.05				
11	.03				.47	.37								
12				.04										
13				.02										
14			.02					.15					.04	
15								.10		.10			.14	
16		.01				.05								
17				.08			.02							
18		.01				.05	.07				.04			
19		.11					.35	.02						
20		.01												
21		.06				.27		2.07						
22						.28			.01					
23	.05		.17										.05	
24	.02							.14						
25	.10			.05							.05		.04	
26	.02										.06			
27						.12								
28						.13	.10							
29							.28	.17			.04			
30							.88							
31					.17			.06		.02				
TOTAL	.22	.27	.22	.38	3.38	4.59	.79	3.67	.03	.17	.27	.41		
STA AV	.20	.28	.40	.91	2.47	3.39	1.47	1.31	.83	.40	.19	.27		

NOTES: PRECIPITATION VALUES ARE FOR RAIN GAGE W-5A. ALL PRECIPITATION FROM JANUARY 1-APRIL 15 AND NOVEMBER 15-DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.5-4.													
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1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-5 57M-5						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2					.05							
3												
4												
5												
6					.01							
7					T	.28						
8												
9												
10												
11						T						
12												
13												
14												
15												
16												
17												
18												
19												
20												
21								.96				
22												
23												
24												
25												
26												
27												
28												
29												
30		-----				.08						
31		-----		-----		-----			-----		-----	
MEAN												
INCHES					.06	.36		.96				

NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-7 (AREA - 160 ACRES)							57M-7
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 1/P	.24	.27	.17	.44	3.24	4.49	.93	3.42	.03	.17	.26	.39	14.05
Q	.00	.00	.00	.00	T	T	.00	.16	.00	.00	.00	.00	.16
STA AV2/P	.22	.34	.42	.99	2.50	3.39	1.61	1.38	.90	.42	.25	.28	12.70
(58-64) Q	.00	.01	.11	.00	.02	.09	.05	.03	T	.00	.00	.00	.31
MEAN P 3/													
57 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52
NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 82%, fair - 18%. Degree of grazing: full. 1/ Precipitation from rain gage W-7A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 57-yr. (1908-1964) U. S. Weather Bureau Record period at Newell, S. D.													
GENERALLY REPRESENTS: (Revision) Pierre Shale Plains and Badlands land resource area (G-60) changed to Northern Rolling High Plains land resource area (G-58) and Northern Smooth High Plains land resource area (G-59).													
1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-7							57M-7
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1						.04							.02
2					1.59		.18		.02				.04
3													
4				.01									
5			.03	.08	.40			.57					
6				.11	.24								
7						.66		.44					.04
8					.13	1.15							
9		.07				.07							
10					.11		.38			.05			
11	.03				.32	.36							
12				.04									
13				.02									
14													
15			.02					.12			.10		.04
16		.01						.12		.08			.16
17						.07							
18		.01		.09			.10						
19		.11				.10	.25				.05		
20		.01					.02	.02					
21		.06				.61		1.76					
22						.15			.01				
23	.07		.12										.05
24	.01							.19					
25	.10			.09							.03		.04
26	.03										.06		
27													
28					.15	.20							
29					.14	.29		.14			.02		
30						.79							
31					.16			.06		.04			
TOTAL	.24	.27	.17	.44	3.24	4.49	.93	3.42	.03	.17	.26	.39	
STA AV	.22	.34	.42	.99	2.50	3.39	1.61	1.38	.90	.42	.25	.28	
NOTES: PRECIPITATION VALUES ARE FOR RAIN GAGE W-7A. ALL PRECIPITATION FROM JANUARY 1-APRIL 15 AND NOVEMBER 15- DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.7-4.													

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1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-7 57M-7						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2					T							
3												
4												
5								T				
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21								.16				
22						T						
23												
24												
25												
26												
27												
28												
29												
30		-----				T						
31		-----		-----								
MEAN					T	T		.16				
INCHES												
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-12 (AREA - 90 ACRES)									57F-12
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964 1/ P	.18	.23	.22	.64	2.78	5.56	.80	1.17	.16	.47	.53	.47	13.21		
Q	.00	.00	.01	.00	.08	1.97	.00	.01	.00	.00	.00	.00	2.07		
STA AV2/P	.23	.30	.40	1.18	2.49	3.80	1.72	.88	.91	.49	.31	.24	12.95		
(58-64) Q	.00	.02	.32	.16	.61	.90	.18	.08	T	.00	.01	.01	2.29		
Mean P 3/															
57 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52		
NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 94%, fair - 6%. Degree of grazing: close. 1/ Precipitation from rain gage W-12A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 57-yr. (1908-1964) U. S. Weather Bureau record period at Newell, S. D.															
1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-12								57F-12	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC			
1					.10	.03							.05		
2					.73		.21		.02				.01		
3													.05		
4													.04		
5		.01	.02	.13	.35								.02		
6				.02	.08										
7				.08		1.63									
8					.07	1.72	.09	.03							
9					.02	.10									
10		.02			.49		.11			.05					
11	.02				.50	.43									
12				.09		.05									
13					.30										
14						.20		.03					.10		
15													.15		
16						.10				.10					
17															
18		.02		.02					.03						
19		.17		.11		.10	.32		.08		.04				
20				.19			.07								
21	.01	.01				.06		.69							
22			.03			.40		.01	.03						
23	.05		.17										.03		
24	.01							.09					.02		
25	.06										.07				
26	.03										.41				
27													T		
28					.04	.27									
29					.08	.43		.32			.01				
30						.04									
31					.02					.32					
TOTAL	.18	.23	.22	.64	2.78	5.56	.80	1.17	.16	.47	.53	.47			
STA AV	.23	.30	.40	1.18	2.49	3.80	1.72	.88	.91	.49	.31	.24			
NOTES: PRECIPITATION VALUES ARE FOR RAIN GAGE W-12A. ALL PRECIPITATION FROM JANUARY 1-APRIL 15 AND NOVEMBER 15-DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.12-4.															

1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-12							57F-12
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1													
2					.01								
3													
4													
5					T								
6					T								
7						.35							
8						1.29							
9			.01			.22							
10													
11					.07	.06							
12													
13													
14													
15													
16													
17													
18													
19													
20													
21								.01					
22													
23													
24													
25													
26													
27													
28						.05							
29													
30													
31													
MEAN			.01		.08	1.97		.01					
INCHES													
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.													

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-13 (AREA - 160 ACRES)						57F-13	
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 <u>1</u> /P	.30	.13	.42	.38	3.20	5.99	1.08	2.50	.10	.14	.14	.37	14.75
Q	.00	.00	.05	T	T	.62	.00	.01	.00	.00	.00	.00	.68
STA AV <u>2</u> /P	.23	.29	.36	.87	2.47	3.54	1.41	.89	.81	.46	.27	.28	11.88
(58-64) Q	.00	.01	.16	.02	.22	.41	T	T	T	T	T	.00	.82
Mean P <u>3</u> /													
57 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52
NOTES: Watershed conditions: 100% rangeland. Condition classes: excellent - 8%, good - 67%, fair - 25%. Degree of grazing: full. <u>1</u> / Thiessen weighted precipitation from rain gages W-13B and W-13C. <u>2</u> / Precipitation and runoff records began January 1958. <u>3</u> / Mean P based on 57-yr. (1908-1964) U. S. Weather Bureau record period at Newell, S. D.													
1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-13						57F-13	
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1					.08	.02							.02
2				.02	1.17		.38		.02				.04
3													
4													
5		.01	.02	.03	.54	.22							
6				.02	.09								
7				.01	.08	1.80							
8					.08	1.86		.14					
9						.12							
10		.02			.33		.16						
11	.05				.52	.33							
12				.06									.01
13					.12								
14						.06		.15			.02		.03
15								.03		.07			.17
16						.10							
17						.03							
18		.02		.10		.09	.41		.05				
19		.06				.02	.10	.03	.03		.04		
20				.14									
21		.02				.27		2.04					
22			.02										.07
23	.06		.38					.02					
24	.04							.05					.03
25	.10										.04		
26	.05										.04		
27													
28					.04	.34							
29					.12	.54	.03	.04					
30						.19				.07			
31					.03								
TOTAL	.30	.13	.42	.38	3.20	5.99	1.08	2.50	.10	.14	.14	.37	
STA AV	.23	.29	.36	.87	2.47	3.54	1.41	.89	.81	.46	.27	.28	
NOTES: THIESSEN WEIGHTED PRECIPITATION USING RAIN GAGES W-13B AND W-13C. ALL PRECIPITATION FROM JANUARY 1-APRIL 15 AND NOVEMBER 15-DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.13-4.													

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1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-13 57F-13						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2					T							
3												
4												
5												
6												
7						.03						
8						.46						
9						.13						
10												
11					T							
12			.05									
13				T								
14												
15												
16												
17												
18												
19												
20												
21								.01				
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
MEAN												
INCHES			.05	T	T	.62		.01				
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-14 (AREA - 35 ACRES)							57F-14
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 ^{1/} P	.16	.27	.30	.78	3.41	5.20	1.41	1.47	.21	.43	.21	.48	14.33
Q	.00	.00	.21	.00	.05	.46	T	.03	.00	.00	.00	.00	.75
STA AV ^{2/} P	.27	.31	.42	1.50	2.57	3.67	2.02	.89	.82	.56	.34	.30	13.67
(58-64) Q	.00	.04	.22	.08	.20	.49	.21	.03	.01	T	.01	T	1.29
MEAN P ^{3/}													
57 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52
NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 54%, fair - 46%. Degree of grazing: full. ^{1/} Precipitation from rain gage W-14A. ^{2/} Precipitation and runoff records began January 1958. ^{3/} Mean P based on 57-yr. (1908-1964) U. S. Weather Bureau record period at Newell, S. D.													
1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-14							57F-14
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1				.12	.02								.02
2				.88			.21		.02	.02			.02
3													
4													
5		.01	.03	.12	.83	.03							
6			.02	.01	.10								.10
7				.02	.10	1.49							
8					.10	1.66	.02	.02					
9						.10							
10		.03			.31		1.05						
11	.02				.52	.28	.05						
12				.13		.13							.01
13													.02
14					.22						.03		.10
15			.02			.12		.02	.02				.15
16										.03			
17						.09							
18		.01		.06		.03			.10				
19		.20		.14			.05		.07		.03		
20				.25		.04	.03						
21		.02				.03		.90					
22			.02			.85		.03					.02
23	.07		.20					.11					
24	.01							.01					.04
25	.02				.10						.07		
26	.04				.02						.05		
27			.01		.01	.27							
28					.04	.06		.38			.01		
29											.02		
30													
31					.06					.38			
TOTAL	.16	.27	.30	.78	3.41	5.20	1.41	1.47	.21	.43	.21	.48	
STA AV	.27	.31	.42	1.50	2.57	3.67	2.02	.89	.82	.56	.34	.30	
NOTES: PRECIPITATION VALUES ARE FOR RAIN GAGE W-14A. ALL PRECIPITATION FROM JANUARY 1-APRIL 15 AND NOVEMBER 15- DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65,14-4.													

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1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-14 57F-14						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1												
2					T							
3												
4												
5					.01							
6					.01							
7						.02						
8						.19						
9						.13						
10							T					
11					.03							
12												
13												
14												
15												
16												
17												
18												
19			.21									
20												
21								.02				
22						.12						
23												
24												
25												
26												
27												
28												
29								.01				
30												
31												
MEAN			.21		.05	.46	T	.03				
INCHES												
NOTES:	DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.											

MONTHLY PRECIPITATION AND RUNOFF (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-15 (AREA - 115 ACRES)							57F-15
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 1/P	.24	.25	.47	.81	3.37	5.17	1.32	1.49	.22	.33	.22	.53	14.42
Q	.00	.00	.00	.00	.08	.36	T	T	.00	.00	.00	.00	.44
STA AV 2/P	.37	.32	.48	1.59	2.73	3.71	2.17	.93	.86	.59	.40	.33	14.48
(58-64) Q	.00	T	.11	.11	.24	.41	.24	.02	.01	T	.01	.00	1.15
MEAN P 3/													
57 YR	.42	.37	.75	1.64	2.68	3.02	2.11	1.36	1.27	1.00	.52	.38	15.52
NOTES: Watershed conditions: 100% rangeland. Condition classes: good - 41%, fair - 59%. Degree of grazing: full. 1/ Precipitation from rain gage W-15A. 2/ Precipitation and runoff records began January 1958. 3/ Mean P based on 57-yr. (1908-1964) U. S. Weather Bureau record period at Newell, S. D.													
1964 DAILY PRECIPITATION (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-15							57F-15
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1					.17	.05				.03			.02
2				.05	.76		.28			.02			.02
3													
4													
5		.01	.04	.18	.80	.04							
6			.02	.02	.10								.12
7				.02	.07	1.43							
8					.10	1.68	.02	.02					
9						.05							
10		.03			.37		.90						
11	.03				.52	.31	.03						
12				.16									
13						.10							.01
14					.20						.03		.02
15			.02			.12		.02	.02				.12
16										.03			.15
17						.09							
18		.02		.06		.05			.10				
19		.18		.14			.06		.08		.03		
20				.18		.04	.03						
21		.01				.03		.93					
22			.02			.85		.03					
23	.10		.36					.11					.03
24	.01							.01					
25	.03				.12						.08		.04
26	.07				.02						.05		
27			.01										
28					.01	.26							
29					.07	.07		.37			.01		
30											.02		
31					.06					.27			
TOTAL	.24	.25	.47	.81	3.37	5.17	1.32	1.49	.22	.33	.22	.53	
STA AV	.37	.32	.48	1.59	2.73	3.71	2.17	.93	.86	.59	.40	.33	
NOTES: PRECIPITATION VALUES ARE FOR RAIN GAGE W-15A. ALL PRECIPITATION FOR JANUARY 1-APRIL 15 AND NOVEMBER 15- DECEMBER 31 IS SNOW; ALL OTHER PRECIPITATION IS RAIN. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 65.15-4.													

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1964 DAILY DISCHARGE (inches)						NEWELL, SOUTH DAKOTA WATERSHED W-15							S7F-15
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1					T								
2					T		T						
3													
4													
5					.01								
6					.01								
7						.01							
8						.22							
9						.07							
10							T						
11					.06	.01							
12													
13													
14													
15													
16													
17													
18													
19													
20													
21								T					
22						.05							
23													
24													
25													
26													
27													
28								T					
29													
30													
31													
MEAN													
INCHES					.08	.36	T	T					
NOTES: DISCHARGE RECORD OBTAINED BY A-35 RECORDER ON POND.													

MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA WATERSHED W-1 AREA—8.57 ACRES							
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
1964 P 1/ Q	2.80 .75	2.43 .32	2.19 .96	4.31 .62	.64 .10	3.27 T	2.43 .00	1.39 .00	4.78 .00	.62 .00	1.42 .00	1.80 .00	28.08 2.75
STA AVG 2/ (58-64) P	1.60 .28	2.53 .67	3.14 1.38	2.85 .42	3.04 .24	3.34 .07	3.04 .01	2.41 .07	2.91 .01	1.57 .02	1.83 .02	1.86 .02	30.12 3.21
MEAN P 3/ 25 YR	1.98	1.79	2.51	2.39	3.05	4.37	3.41	3.63	2.24	2.26	1.80	1.71	31.14

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		5 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-29	.11	4-29	.07	4-29	.12	4-29	.23	4-29	.32	4-29	.50	4-29	.60	5-5	.69

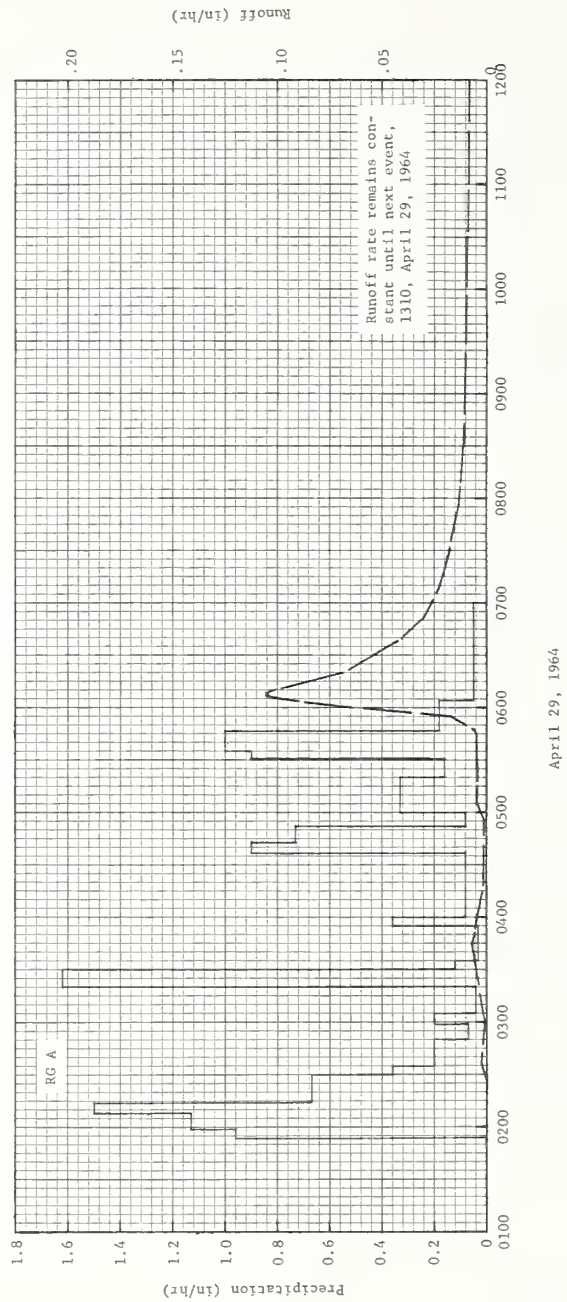
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	8-3 1958	.44	8-3 1958	.17	3-19 1963	.25	3-19 1963	.68	3-19 1963	.89	3-20 1963	1.08	3-12 1962	1.35	3-11 1962	1.87

NOTES: Watershed conditions: 100% permanent pasture with controlled grazing. 1/ Precipitation records from rain gage A. 2/ Precipitation records began April 1958; runoff records began May 1958. 3/ Mean P based on 25-yr (1940-64) U. S. Weather Bureau record period at Petersburg, West Virginia.

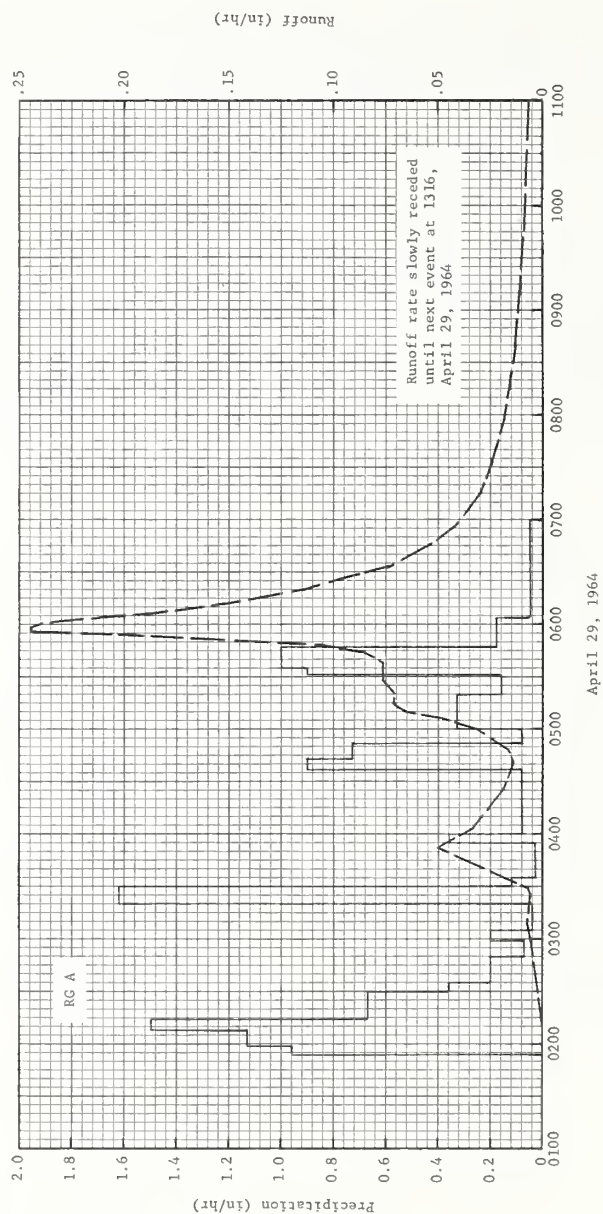
1964 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA WATERSHED W-1					
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF					
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)	
			Event of April 29, 1964								
RG A			RC			A					
3-29	4/.01	5/.0028	4-29	0154	.00	.00	4-29	0226	.0000	.0000	
3-30	.00	.0028		0159	.96	.08		0236	.0024	.0003	
3-31	.04	.0028		0208	1.13	.25		0300	.0008	.0010	
4-1	.00	.0028		0214	1.50	.40		0344	.0067	.0025	
4-2	.41	.0034		0230	.67	.56		0420	.0008	.0041	
4-3	.00	.0028		0235	.36	.61		0452	.0008	.0045	
4-4	.00	.0028		0250	.20	.66		0456	.0013	.0046	
4-5	.00	.0028		0259	.07	.67		0500	.0024	.0047	
4-6	.20	.0028		0305	.20	.69		0505	.0039	.0050	
4-7	.04	.0028		0320	.04	.70		0524	.0039	.0062	
4-8	.09	.0028		0330	1.62	.97		0534	.0047	.0070	
4-9	.01	.0014		0335	.12	.98		0544	.0047	.0078	
4-12	.01	.0000		0355	.03	.99		0547	.0058	.0080	
4-13	.04	.0000		0400	.36	1.02		0555	.0179	.0096	
4-14	.03	.0000		0437	.08	1.07		0602	.0779	.0152	
4-19	.13	.0000		0443	.90	1.16		0604	.0908	.0180	
4-20	.40	.0004		0452	.73	1.27		0606	.1050	.0213	
4-21	.03	.0000		0500	.08	1.20		0608	.1050	.0248	
4-22	.01	.0000		0520	.33	1.39		0620	.0689	.0422	
4-27	.21	.0000		0531	.16	1.42		0640	.0405	.0604	
4-28	.12	.0000		0535	.90	1.48		0652	.0300	.0674	
4-29	.00	6/.0045		0547	1.00	1.68		0710	.0227	.0753	
				0604	.18	1.73		0726	.0179	.0807	
				0700	.05	1.78		0756	.0136	.0886	
								0834	.0111	.0965	
								1034	.0088	.1164	
								1140	7/.0077	.1255	

Watershed conditions: Permanent pasture, poor to fair cover of native grasses and weeds 1 to 3 in. high, beginning to grow.

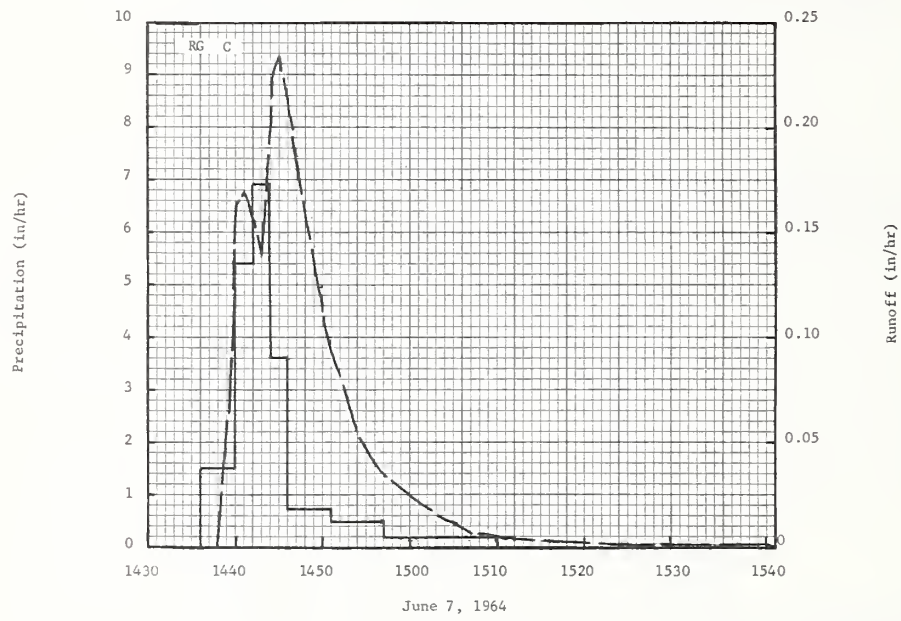
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 8.6414. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 66.1-3. 4/ 0200 TO 0600. 5/ CONTINUOUS RUNOFF. 6/ PRIOR TO 0226. 7/ RUNOFF RATE REMAINS CONSTANT UNTIL NEXT EVENT WHICH STARTED 1310, 4-29-64.											
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MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA WATERSHED W-2 AREA—9.73 ACRES										
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P ₁ / Q	2.80 .88	2.43 .12	2.19 .96	4.31 .75	.64 .03	3.27 T	2.43 .00	1.39 .00	4.78 .01	.62 .00	1.42 T	1.80 T	28.08 2.75		
STA AVE (58-64)	2.6 Q	1.60 .36	2.53 .68	3.14 1.40	2.85 .48	3.04 .34	3.34 .09	3.04 .04	2.41 .09	2.91 .04	1.57 .05	1.83 .04	1.86 .07	30.12 3.68		
MEAN 25 YR	3.1 Q	1.98	1.79	2.51	2.39	3.05	4.37	3.41	3.63	2.24	2.26	1.80	1.71	31.14		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-29	.24	4-29	.14	4-29	.20	4-29	.28	4-29	.42	4-29	.67	4-29	.75	3-1	.80
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	8-3 1958	.76	8-3 1958	.34	8-3 1958	.38	3-19 1963	.82	3-20 1963	1.05	3-20 1963	1.21	3-12 1962	1.44	3-20 1963	2.02
NOTES: Watershed conditions: 100% permanent pasture with controlled grazing. 1/ Precipitation records from rain gage A. 2/ Precipitation and runoff records began April 1958. 3/ Mean P based on 25-yr (1940-64) U. S. Weather Bureau record period at Petersburg, West Virginia.																
1964 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA WATERSHED W-2										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 29, 1964																
RG A			RC A													
3-29	4.01	.0000	4-29	0154	.00	.00	4-29	0209	.0000	.0000						
3-31	.04	.0000		0159	.96	.08		0232	.0028	.0001						
4-2	.41	.0013		0208	1.13	.25		0258	.0059	.0021						
4-3	.00	.0005		0214	1.50	.40		0309	.0077	.0033						
4-6	.20	.0000		0230	.67	.58		0325	.0059	.0052						
4-7	.04	.0000		0235	.36	.61		0329	.0077	.0056						
4-8	.09	.0000		0250	.20	.66		0352	.0507	.0153						
4-9	.01	.0000		0259	.07	.67		0404	.0336	.0239						
4-12	.01	.0000		0305	.20	.69		0426	.0185	.0331						
4-13	.04	.0000		0320	.04	.70		0440	.0145	.0369						
4-14	.03	.0000		0330	1.62	.97		0442	.0145	.0374						
4-19	.13	.0000		0335	.12	.98		0448	.0171	.0390						
4-20	.40	.0001		0355	.03	.99		0500	.0317	.0439						
4-21	.03	.0000		0400	.36	1.02		0506	.0485	.0479						
4-22	.01	.0000		0437	.08	1.07		0508	.0581	.0500						
4-27	.21	.0000		0443	.90	1.16		0510	.0658	.0517						
4-28	.12	.0000		0452	.73	1.27		0514	.0715	.0563						
4-29	.00	5/.0374		0500	.08	1.28		0521	.0715	.0646						
Watershed conditions: Permanent pasture, poor to fair cover of native grasses and weeds 1 to 3 in. high, beginning to grow.				0520	.33	1.39		0528	.0772	.0733						
				0531	.16	1.42		0538	.0772	.0862						
				0535	.90	1.48		0544	.0863	.0943						
				0547	1.00	1.68		0548	.1061	.1008						
				0604	.18	1.73		0554	.1977	.1160						
				0700	.05	1.78		0556	.2443	.1233						
								0558	.2443	.1315						
								0600	.2390	.1395						
								0606	.1883	.1609						
								0612	.1518	.1779						
								0620	.1131	.1956						
								0626	.0925	.2058						
								0632	.0743	.2142						
					0646	.0530	.2290									
					0656	.0417	.2369									
					0715	.0299	.2482									
					0732	.0247	.2560									
					0758	.0185	.2653									
					0816	.0158	.2705									
					0840	.0132	.2763									
					0910	.0109	.2823									
					0950	.0088	.2889									
					1050	6/.0068	.2967									
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 9.8111. FOR REVISED MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1962, USDA MISC. PUB. 1070, P. 66.2-3. 4/ 0200 TO 0600. 5/ PRIOR TO 0209. 6/ RUNOFF RATE SLOWLY RECEDED UNTIL NEXT EVENT WHICH STARTED 1316, 4-29-64.																

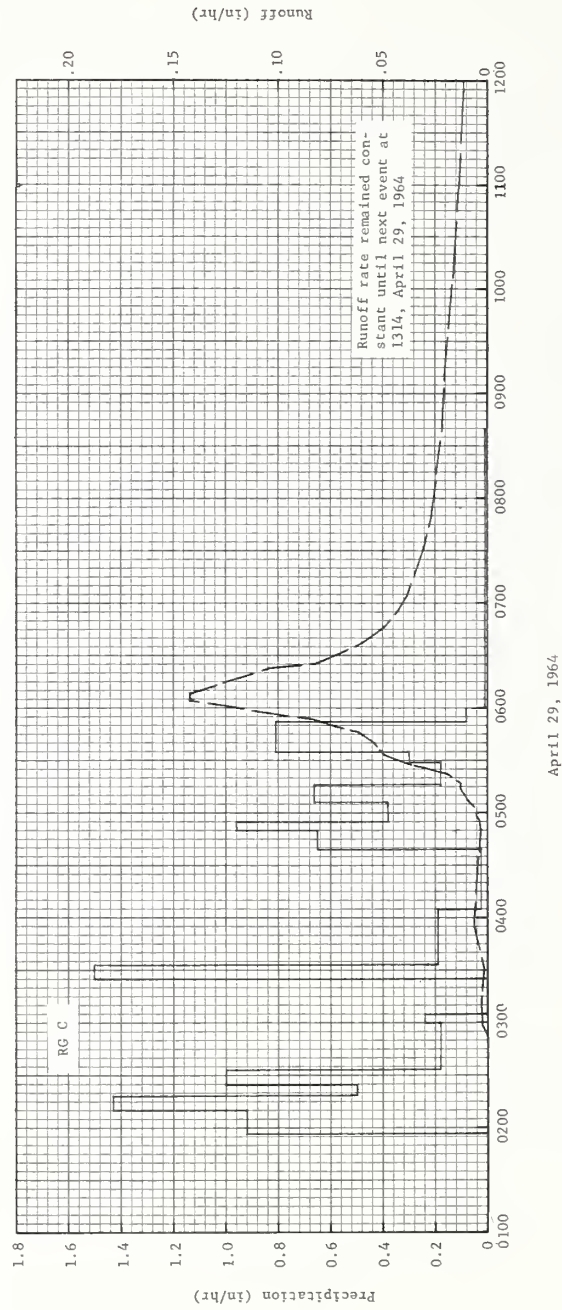


MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA WATERSHED W-4 AREA—6.32 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P ₁ / Q	2.71 1.18	2.46 .31	2.23 .74	4.16 .38	.65 .04	3.06 .05	2.58 .01	1.61 T	4.87 .02	.62 T	1.43 T	1.66 .02	28.04 2.75			
STA AVG ₂ / (58-64) _Q	1.62 .32	2.50 .55	3.15 .99	2.83 .25	3.20 .18	3.37 .06	2.87 .06	2.42 .11	2.84 .05	1.50 .04	1.86 .03	1.82 .06	29.98 2.70			
MEAN P ₃ / 25 YR	1.98	1.79	2.51	2.39	3.05	4.37	3.41	3.63	2.24	2.26	1.80	1.71	31.14			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-7	.23	1-3	.06	1-3	.11	1-3	.23	1-3	.26	3-3	.40	3-2	.51	3-2	.66
MAXIMUMS FOR PERIOD OF RECORD																
19 58 TO 1964	8-3 1958	.69	8-3 1958	.27	2-19 1961	.31	3-19 1963	.64	3-19 1963	.76	3-20 1963	.85	2-18 1961	.97	2-17 1961	1.54
Notes: Watershed conditions: 100% permanent pasture with controlled grazing. September 1, 1964, the complete watershed was chiseled on the contour to an average depth of about 24 in., with a contour interval (horizontal) of about 8 to 10 ft. 1/ Precipitation records from rain gage C. 2/ Precipitation records began June 1958; runoff records began May 1958. 3/ Mean P based on 25-yr (1940-64) U.S. Weather Bureau record period at Petersburg, West Virginia.																
1964 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA WATERSHED W-4										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 7, 1964																
RG C			RG		C											
5 -1	.03	.0000	6 -7	1436	.00	.00	6 -7	1438	.0000	.0000						
5 -8	.01	.0000		1440	1.50	.10		1439	.0549	.0005						
5-12	.04	.0000		1442	5.40	.28		1440	.1635	.0023						
5-13	.44	.0000		1444	6.90	.51		1441	.1688	.0050						
5-17	.05	.0000		1446	3.60	.63		1442	.1581	.0078						
5-19	.06	.0000		1451	.72	.69		1443	.1377	.0102						
5-24	.02	.0000		1457	.50	.74		1444	.2213	.0132						
6 -1 ¹	.60	.0000		1510	.18	.78		1445	.2338	.0170						
6 -6	.20	.0000						1446	.2087	.0207						
								1447	.1855	.0240						
								1449	.1425	.0294						
								1450	.1057	.0315						
								1452	.0816	.0346						
								1454	.0549	.0369						
								1456	.0380	.0385						
								1501	.0204	.0409						
								1505	.0105	.0419						
								1507	.0064	.0422						
								1512	.0033	.0426						
								1516	.0017	.0428						
								1522	.0005	.0429						
								1530	.0002	.0429						
								1538	.0002	.0429						
								1541	.0000	.0429						
Watershed conditions: Permanent pasture, poor to fair cover of native grasses and weeds 2 to 4 inches high.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 6.3727. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, PP. 66.4-3.																



MOOREFIELD, WEST VIRGINIA WATERSHED W-4

MONTHLY PRECIPITATION AND RUNOFF (inches)						MOOREFIELD, WEST VIRGINIA WATERSHED W-5 AREA—9.55 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964	2.71	2.46	2.23	4.16	.65	3.06	2.58	1.61	4.87	.62	1.43	1.66	28.04			
P 1/ Q	1.06	.15	1.17	.76	.07	T	.00	.00	.00	.00	.00	.00	3.21			
STA AVG 2/ (58-64) Q	1.62	2.50	3.15	2.83	3.20	3.37	2.87	2.42	2.84	1.50	1.86	1.82	29.98			
P 3/ Q	.42	.87	1.48	.45	.31	.07	.03	.08	.02	.05	.04	.08	3.90			
MEAN P 3/ 25 YR	1.98	1.79	2.51	2.39	3.05	4.37	3.41	3.63	2.24	2.26	1.80	1.71	31.14			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-29	.14	4-29	.09	4-29	.14	4-29	.24	4-29	.38	4-29	.64	4-29	.77	3-1	1.02
MAXIMUMS FOR PERIOD OF RECORD																
1958 TO 1964	8-3 1958	.65	8-3 1958	.27	8-3 1958	.31	3-19 1963	.70	3-19 1963	.95	3-20 1963	1.14	2-18 1961	1.39	2-17 1961	2.21
Notes: Watershed conditions: 100% permanent pasture with controlled grazing. September 1, 1964, the complete watershed was chiseled on the contour to an average depth of about 24 in., with a contour interval (horizontal) of about 8 to 10 ft. 1/ Precipitation records from rain gage C. 2/ Precipitation records began June 1958; runoff records began May 1958. 3/ Mean P based on 25-yr (1940-64) U.S. Weather Bureau record period at Petersburg, West Virginia.																
1964 SELECTED RUNOFF EVENT						MOOREFIELD, WEST VIRGINIA WATERSHED W-5										
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of April 29, 1964																
	RG C			RG	C											
3-29	4/.01	.0000	4-29	0157	.00	.00	4-29	0252	.0000	.0000						
3-31	.04	.0000		0210	.92	.20		0258	.0022	.0001						
4-2	.38	.0015		0218	1.43	.39		0310	.0028	.0007						
4-3	.00	.0001		0224	.50	.44		0330	.0016	.0014						
4-6	.20	.0000		0233	1.00	.59		0356	.0060	.0029						
4-7	.04	.0000		0300	.18	.67		0450	.0035	.0067						
4-8	.10	.0000		0305	.24	.69		0456	.0043	.0070						
4-9	.01	.0000		0325	.00	.69		0458	.0052	.0072						
4-12	.01	.0000		0333	1.50	.89		0500	.0052	.0074						
4-13	.04	.0000		0405	.19	.99		0503	.0060	.0077						
4-14	.03	.0000		0439	.02	1.00		0507	.0089	.0082						
4-19	.13	.0000		0450	.65	1.12		0514	.0123	.0094						
4-20	.38	.0000		0455	.96	1.20		0517	.0123	.0100						
4-21	.03	.0000		0506	.38	1.27		0522	.0189	.0113						
4-22	.01	.0000		0516	.66	1.38		0526	.0323	.0130						
4-27	.20	.0000		0529	.18	1.42		0528	.0384	.0142						
4-28	.14	.0000		0535	.30	1.45		0534	.0494	.0186						
4-29	.00	.00066		0552	.81	1.68		0536	.0517	.0202						
				0600	.08	1.69		0540	.0540	.0238						
				0840	.01	1.72		0546	.0619	.0296						
Watershed conditions: Permanent pasture, poor to fair cover of native grasses and weeds 1 to 3 inches high, beginning to grow.											0550	.0729	.0341			
								0554	.0847	.0393						
								0600	.1190	.0495						
								0604	.1423	.0582						
								0608	.1423	.0677						
								0618	.1046	.0883						
								0626	.0815	.1007						
								0638	.0592	.1146						
								0646	.0494	.1220						
								0656	.0425	.1297						
								0704	.0384	.1350						
								0732	.0304	.1511						
								0750	.0269	.1597						
								0842	.0219	.1808						
								0910	.0203	.1907						
								1010	.0161	.2089						
								1154	6/.0111	.2325						
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 9.6296. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, PP. 66.5-3. 4/ 0200 TO 0600. 5/ PRIOR TO 0252. 6/ RUNOFF RATE REMAINS CONSTANT UNTIL NEXT EVENT WHICH STARTED 1314, 4-29-64.																

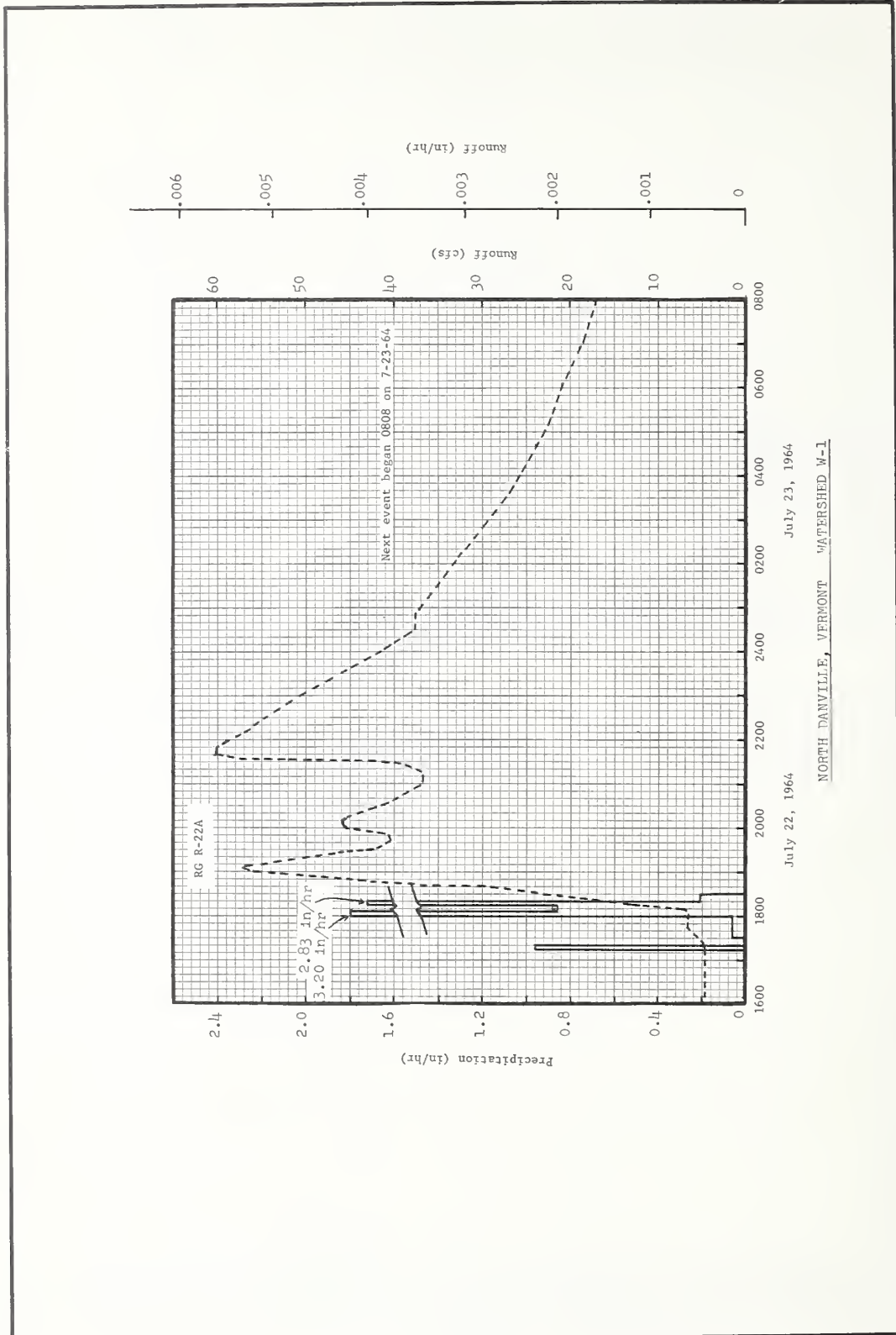


MONTHLY PRECIPITATION AND RUNOFF (inches)						NORTH DANVILLE, VERMONT AREA - 10,610 ACRES (16.58 SQ. MILES)						WATERSHED W-1 67.01													
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL												
1964 F ¹	2.76	1.19	4.32	2/ 3.30	3.81	1.94	3.40	4.99	1.16	2.26	3.24	3.40	35.77												
Q	.75	.36	2.06	5.50	1.94	.40	.28	.56	.18	.29	.90	1.24	14.46												
STA AV ³ P	2.11	2.52	2.48	3.79	3.05	2.94	4.11	3.34	2.60	3.22	3.42	2.30	35.88												
(58-64) Q	.93	.89	1.31	7.20	2.27	.77	.45	.40	.34	1.47	1.64	1.38	19.05												
MEAN P ⁴ / _{69 YR}	2.35	2.14	2.47	2.68	2.94	3.46	3.64	3.59	3.45	2.87	3.01	2.46	35.06												
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																									
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																						
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS										
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME									
1964	3-5	.04	3-5	.04	3-5	.07	3-5	.21	4-14	.38	4-15	.71	4-16	1.19	4-20	2.84									
MAXIMUMS FOR PERIOD OF RECORD																									
1959 TO 1964	10-24 1959	.10	10-24 1959	.10	10-24 1959	.20	10-24 1959	.50	10-24 1959	.77	10-24 1959	1.14	10-24 1959	1.45	4-12 1960	3.86									
Notes: Quality of records: P and Q excellent. Watershed conditions: Predominantly hardwood forest, 64%; cultivated in long hay rotations, with about 1% in row crops, 17%; pasture, largely blue grass, 15%; idle land in grass and woody plants, 3%; and homesites and roads, 1%. 1/ Precipitation is an arithmetic average using 17 rain gages. 2/ Snow water equivalent on April 6 was 8.61 inches and had completely melted by April 20. 3/ Precipitation records began on some rain gages Oct. 1958. STA AV P values are averages of monthly values for 1960-64. Runoff records began Oct. 1958, all Q values included in averages. 4/ Mean P based on 69-yr (1895-1963) U.S. Weather Bureau record period at St. Johnsbury, Vt.																									
1964 DAILY AIR TEMPERATURE (degrees F)						NORTH DANVILLE, VERMONT						WATERSHED W-1 67.01													
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	19	-14	31	26	40	12	26	2	70	34	62	38	82	58	78	40	62	40	54	26	50	20	17	9	
2	26	14	30	6	44	30	38	4	68	32	64	40	78	50	68	56	64	38	56	36	46	24	22	8	
3	32	28	11	0	51	24	36	22	72	30	65	34	74	56	72	47	63	38	61	41	48	20	28	14	
4	37	16	27	11	48	24	24	12	74	34	59	44	76	56	74	42	58	48	67	36	48	22	26	20	
5	19	-4	32	22	54	35	42	3	72	40	57	34	66	54	64	52	64	50	44	26	36	24	25	22	
6	24	-4	32	10	33	14	40	12	76	40	72	30	70	54	63	42	64	46	50	20	40	36	24	8	
7	28	12	32	28	48	12	49	32	82	46	72	48	70	50	76	36	68	40	40	24	41	24	18	-5	
8	30	5	31	16	36	28	46	36	78	56	74	51	76	50	74	52	75	41	49	16	49	22	17	-6	
9	30	2	13	-6	35	25	34	32	75	56	74	48	77	50	53	38	70	50	54	32	49	24	25	2	
10	31	12	16	-10	24	18	50	30	58	48	78	46	78	50	66	36	62	52	46	30	38	28	21	4	
11	12	-4	20	-14	28	14	47	28	60	46	67	44	81	52	74	46	65	50	38	24	34	24	34	5	
12	6	-12	34	-6	30	15	58	24	72	44	74	46	80	56	71	58	53	32	48	20	43	35	44	34	
13	4	-12	30	7	32	10	64	32	72	44	72	46	72	58	59	38	60	26	44	40	58	38	40	34	
14	8	-3	28	12	40	10	54	48	56	42	64	53	76	60	60	38	62	28	48	34	40	28	40	16	
15	20	-12	30	0	42	26	54	38	68	32	62	44	78	58	57	42	51	30	72	28	32	21	26	4	
16	22	-2	22	4	26	12	48	32	74	44	56	39	80	56	70	42	52	27	73	38	36	24	16	-6	
17	26	4	18	0	32	6	40	30	68	48	61	46	86	56	72	50	56	32	70	34	32	26	35	18	
18	30	6	36	-6	24	10	58	34	64	44	70	40	90	60	66	46	56	39	63	42	36	18	28	4	
19	36	26	29	4	26	14	47	30	66	42	80	44	82	60	62	42	58	28	46	38	32	10	24	2	
20	38	28	26	16	34	20	40	30	62	36	84	56	78	52	62	42	60	26	44	32	42	20	30	16	
21	38	32	18	5	40	16	56	32	62	30	80	56	86	64	64	44	64	34	40	30	36	20	32	10	
22	34	18	14	-4	40	26	40	38	77	40	76	50	80	64	52	47	68	34	40	28	28	10	24	14	
23	32	10	32	-8	32	18	48	38	85	58	80	46	86	62	58	51	73	50	38	22	32	2	35	25	
24	42	28	30	2	43	12	46	40	84	65	78	60	70	62	70	50	68	48	36	26	32	18	44	35	
25	44	28	22	-10	40	30	50	38	64	46	68	46	72	60	74	44	52	38	52	32	39	30	52	44	
26	34	16	26	4	32	28	65	32	68	41	76	40	80	53	66	48	64	34	56	28	52	40	52	44	
27	26	14	10	-10	29	22	70	34	64	46	68	46	84	62	70	40	66	46	64	38	42	18	46	26	
28	18	6	28	-12	34	12	63	34	48	39	70	40	90	60	74	40	52	28	60	40	34	16	26	16	
29	18	2	30	16	40	20	64	26	47	34	76	40	86	56	80	48	48	28	52	39	42	24	24	7	
30	24	10	---	---	30	14	72	29	56	36	86	56	68	51	81	54	56	38	40	32	26	18	28	16	
31	30	6	---	---	22	8	---	---	62	34	---	---	68	45	78	60	---	---	38	25	---	---	---	34	14
AV.	26	8	25	4	36	18	47	28	68	42	70	45	78	56	68	46	61	38	51	31	40	23	30	15	
MEAN	17.0		14.5		27.0		37.5		55.0		57.5		67.0		57.0		49.5		41.0		31.5		22.5		
STA AV	24	5	27	5	34	16	47	28	65	40	74	47	76	53	73	49	66	42	56	35	41	26	25	8	
NOTES: TEMPERATURE DATA IS FROM R-12. READINGS TAKEN DAILY FROM HYGRO-THERMOGRAPH CHARTS. FOR OTHER TEMPERATURE RECORDS SEE PAGES 67.3-1 AND 67.5-1 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1960-64 RECORDS.																									

Cooperative Research Project of USDA and the Agricultural Experiment Station and the College of Technology, University of Vermont, and the Vermont Department of Water Resources

1964 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-1 67.01						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.23	.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.11	.06	.00	.30	.00	.00	.17	.00	.00	.00	.00	.00
3	.01	.00	.00	.45	.00	.11	.45	.00	.00	.30	.00	.17
4	.06	.05	.40	.00	.00	.27	.00	.00	.35	.03	.00	1.07
5	.00	.18	1.09	.00	.00	.00	.05	.05	.05	.02	.45	.10
6	.13	.00	.00	.00	.00	.00	.10	.00	.00	.00	.01	.09
7	.01	.00	.00	.20	.00	.02	.00	.00	.00	.00	.00	.00
8	.00	.01	.00	.05	.08	.00	.00	.02	.12	.00	.00	.00
9	.48	.00	.37	.00	.39	.00	.00	.00	.02	.00	.00	.05
10	.29	.00	.72	.00	.13	.10	.00	.00	.00	.00	.10	.00
11	.00	.00	.00	.00	.10	.00	.04	.00	.10	.00	.20	.07
12	.00	.00	.00	.00	.00	.00	.00	1.40	.00	.00	.00	.03
13	.05	.13	.00	.00	.15	.00	.09	.00	.00	.06	.05	.05
14	.05	.05	.02	.52	.75	.00	.51	.10	.00	.00	.00	.00
15	.00	.00	.00	.22	.00	.25	.00	.16	.00	.00	.00	.08
16	.03	.29	.13	.00	.14	.05	.00	.00	.00	.00	.47	.00
17	.02	.00	.00	.34	.15	.00	.00	.14	.00	.14	.01	.03
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.04	.03
19	.00	.05	.00	.00	.33	.00	.43	.00	.00	.25	.30	.00
20	.02	.00	.00	.00	.03	.00	.00	.05	.00	.00	.25	.00
21	.53	.05	.00	.00	.00	.00	.35	.00	.00	.51	.02	.00
22	.00	.00	.00	.75	.00	.00	.90	.97	.00	.02	.02	.10
23	.00	.00	.00	.05	.00	.00	.00	1.68	.00	.00	.00	.00
24	.00	.00	.00	.00	.11	.15	.00	.10	.00	.00	.00	.10
25	.63	.00	.08	.00	.41	.00	.00	.00	.00	.00	.00	.01
26	.04	.00	.75	.00	.14	.03	.00	.30	.00	.00	.90	.24
27	.00	.00	.02	.00	.21	.47	.00	.00	.38	.00	.00	.42
28	.00	.00	.35	.00	.05	.00	.00	.00	.00	.05	.01	.62
29	.00	.00	.00	.00	.00	.02	.05	.00	.00	.25	.14	.00
30	.03	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00	.11
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10
TOTAL	2.72	1.08	3.93	2.88	3.18	1.50	2.97	4.97	1.02	1.73	2.97	3.47
ST. AV.	2.35	2.33	1.67	3.06	2.53	2.42	3.37	3.62	2.21	3.85	3.54	2.52
NOTES: PRECIPITATION VALUES ARE FOR R-22A. ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. FOR OTHER PRECIPITATION RECORDS SEE PAGES 67.3-2 AND 67.5-2 OF THIS PUBLICATION. STA. AV (STATION AVERAGE) BASED ON 1959-64 RECORDS.												
1964 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-1 67.01						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	10.16	8.24	3.74	13.16	34.23	10.16	2.57	1.60	3.10	2.46	4.81	6.42
2	14.23	8.13	3.74	13.27	30.60	9.41	2.35	1.60	2.67	2.25	4.39	4.39
3	13.80	7.38	4.49	13.16	27.39	8.02	4.39	1.71	2.35	3.74	4.06	5.78
4	12.84	7.17	6.85	11.77	24.82	16.90	9.20	1.50	3.21	3.53	3.85	7.06
5	10.48	6.95	225.41	12.41	22.25	13.37	3.96	1.50	4.49	2.78	4.81	8.24
6	8.02	6.95	123.89	12.52	19.90	9.31	3.42	1.71	3.42	2.46	14.23	8.77
7	7.06	7.17	54.99	23.86	18.72	7.59	3.32	1.50	2.78	2.35	19.04	8.34
8	5.88	6.95	36.48	81.63	18.40	7.38	3.85	1.71	2.67	2.25	6.31	7.92
9	5.24	6.74	29.31	61.52	37.23	6.53	3.53	2.25	2.99	2.25	5.24	7.92
10	5.88	5.99	23.32	52.53	32.84	5.99	2.67	1.92	2.67	2.35	5.46	7.81
11	4.71	5.35	19.90	68.26	39.26	6.85	2.35	1.50	3.10	2.46	6.42	7.27
12	4.49	5.24	19.26	83.77	26.00	5.24	2.35	5.88	3.74	2.57	9.09	9.31
13	4.60	5.24	17.01	123.46	19.58	4.60	2.25	9.41	2.89	2.67	7.70	13.91
14	4.60	5.24	16.80	273.66	88.47	4.49	3.64	3.53	2.57	2.99	6.53	13.91
15	4.28	5.24	28.03	251.41	48.68	4.60	4.60	3.32	2.35	2.78	5.13	10.91
16	4.28	5.24	24.71	157.05	27.71	7.70	3.10	3.53	2.25	2.67	6.95	9.20
17	4.28	5.13	19.36	125.28	40.87	4.92	2.14	2.78	2.14	2.57	23.00	9.73
18	4.28	4.92	15.73	128.70	24.82	4.17	1.92	2.46	2.25	7.17	10.06	8.88
19	4.39	4.92	14.12	108.48	28.99	3.64	3.64	2.03	2.25	5.78	6.10	9.31
20	4.49	5.03	14.23	75.85	37.34	3.53	3.21	1.82	2.14	5.46	17.01	9.20
21	9.73	4.81	15.23	68.15	23.86	3.10	2.57	1.82	2.03	12.09	14.12	8.56
22	18.40	4.81	17.01	140.90	19.15	2.57	14.76	5.88	1.92	21.07	8.02	8.88
23	14.66	4.49	16.26	128.59	15.62	2.57	16.37	87.41	1.92	7.59	5.13	8.24
24	8.99	4.39	16.15	79.38	12.52	2.67	5.24	51.03	1.92	5.78	7.59	9.63
25	22.79	4.28	19.47	66.76	35.84	3.42	4.06	13.27	1.82	4.92	6.85	60.02
26	51.89	4.28	30.49	66.22	21.72	2.89	3.42	12.20	1.82	4.81	79.27	116.93
27	26.00	4.17	33.16	65.15	20.97	7.70	2.99	9.20	1.92	4.39	62.91	77.99
28	13.91	3.85	21.18	58.63	23.21	4.17	2.35	5.24	3.74	4.06	20.97	30.60
29	10.80	3.74	18.61	47.71	19.15	3.10	2.03	4.06	3.10	4.17	21.08	20.97
30	9.95	-----	17.22	39.58	14.55	2.89	2.14	3.64	2.67	8.45	14.44	20.01
31	8.45	-----	14.66	-----	11.66	-----	1.92	3.32	-----	6.10	-----	18.29
MEAN	10.76	5.59	29.38	81.76	27.96	5.98	4.07	8.08	2.63	4.74	13.69	17.88
INCHES	.748	.363	2.066	5.502	1.944	.403	.283	.561	.177	.306	.896	1.244
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0022433. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ADJUSTED DUE TO ICE JAMS AT THE WEIR.												

1964 SELECTED RUNOFF EVENT			NORTH DANVILLE, VERMONT				WATERSHED W-1 67.01			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
<u>Event of July 22-23, 1964</u>										
7-22	.02	1/0081	7-22	RG	R-22A		7-22	1723	4.81	.0000
				1715	.00	.00		1745	6.63	.0002
				1720	.96	.08		1800	6.63	.0004
				1730	.00	.08		1808	6.95	.0005
				1800	.06	.11		1815	12.52	.0006
				1806	3.20	.43		1823	18.08	.0008
				1813	.86	.53		1829	23.00	.0010
				1820	2.83	.86		1838	28.67	.0013
				1830	.12	.88		1842	36.91	.0015
				RG	R-1			1845	42.47	.0017
7-22	.07		7-22	1745	.00	.00		1900	56.38	.0029
				1750	1.56	.13		1905	57.56	.0033
				1800	.12	.15		1910	54.13	.0038
				RG	R-11 2/			1925	46.54	.0050
								1930	42.47	.0053
7-22	.04		7-22	1715	.00	.00		1942	40.55	.0061
				1740	.72	.30		1950	40.55	.0066
				1800	.00	.30		2000	45.47	.0073
				1815	1.72	.73		2015	45.47	.0083
				1830	.28	.80		2037	40.55	.0098
Watershed conditions: 64% forest land; 16% hay with about 6-inch growth since last cutting; 15% pastured land; 3% idle land with dense grass and brush growth; 1% seeded to corn which was just coming up; 1% homesites.			OTHER	RAIN	GAGE	TOTALS		2100	36.91	.0112
			R-2	.49	R-15	1.30		2115	36.91	.0120
			R-3	.49	R-16	.48		2125	38.73	.0126
			R-5	1.15	R-19	1.30		2130	41.51	.0129
								2135	57.56	.0133
			R-6	.45	R-20	.58		2140	60.02	.0138
			R-8	1.14	R-20A	.87		2145	60.02	.0143
			R-10	.83	R-21	1.37		2215	56.38	.0170
			R-12	.76	AVG 3/	.82		2250	51.89	.0199
								2400	41.51	.0250
							7-23	0030	37.76	.0269
								0050	37.76	.0301
								0215	32.63	.0346
								0338	27.17	.0385
								0500	23.00	.0417
								0600	21.08	.0437
								0700	18.61	.0456
								4/0808	17.01	.0475
NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000935. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, PP. 67.1-4. FOR ISOHYETAL MAP OF ABOVE STORM, SEE PP. 67.5-5. 1/ RUNOFF PRIOR TO 1723 ON 7-22-64. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF SEE PREVIOUS PAGE. 2/ R-11 (LOGATED DOWNSTREAM ON W-5) RECORDS USED, R-21 INTENSITY RECORDS WERE NOT AVAILABLE. 3/ ARITHMETIC AVERAGE OF 16 RAIN GAGES. 4/ BEGINNING ON NEXT EVENT.										



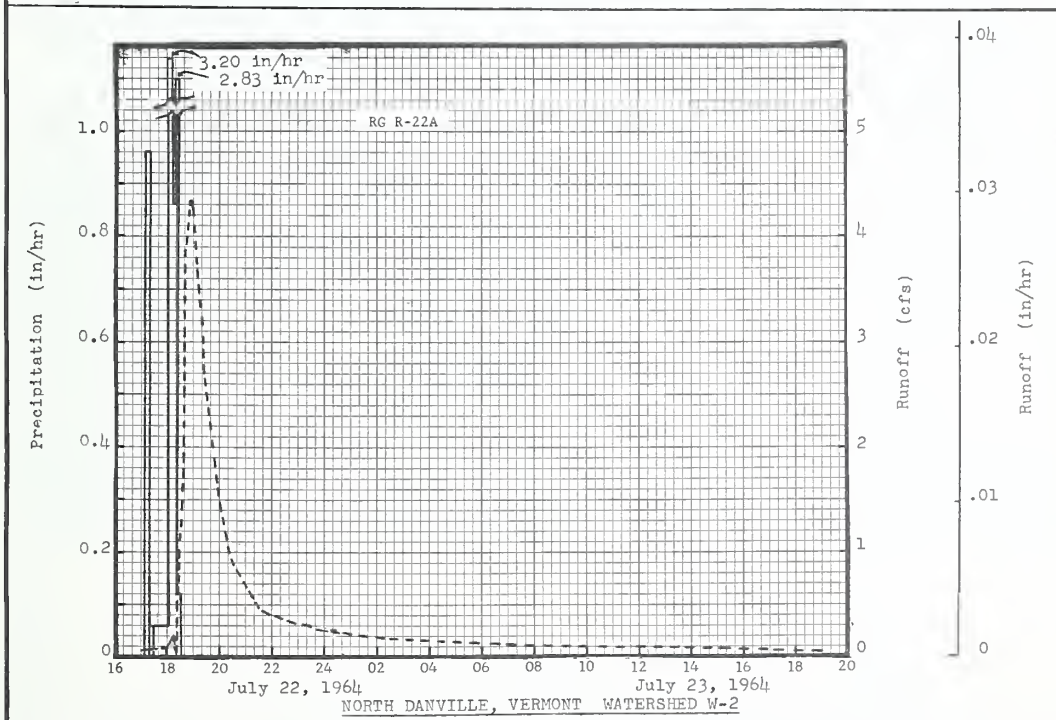
MONTHLY PRECIPITATION AND RUNOFF (inches)						NORTH DANVILLE, VERMONT WATERSHED W-2 AREA — 146 ACRES								67.02											
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL												
1964 P 1/ Q	2.55 .48	1.00 .35	2/4.03 2.32	2.83 2.96	3.08 1.55	1.36 .51	2.79 .31	4.89 .48	.95 .17	1.76 .26	2.95 .62	3.17 1.41	31.36 11.42												
STA AV3/P (58-64) Q	2.28 .81	2.35 .68	2.41 1.62	3.08 4.21	2.49 2.09	2.38 .90	3.40 .47	3.71 .41	2.25 .29	3.94 .68	3.36 1.14	2.31 1.25	33.96 14.55												
MEAN P 4/ 69 YR	2.35	2.14	2.47	2.68	2.94	3.46	3.64	3.59	3.45	2.87	3.01	2.46	35.06												
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																									
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																						
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS										
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME									
1964	3-5	.08	3-5	.08	3-5	.16	3-5	.39	3-5	.58	3-6	.83	3-6	.94	3-13	1.26									
MAXIMUMS FOR PERIOD OF RECORD																									
1959 TO 1964	3-5 1964	.08	3-5 1964	.08	3-5 1964	.16	3-5 1964	.39	3-5 1964	.58	3-6 1964	.83	3-30 1962	1.14	3-28 1962	2.54									
Notes: Quality of records: P and Q, excellent. Watershed conditions: Pasture of mostly bluegrass, 38%; cultivated land entirely in clover and orchard grass hay, 37%; and forest stand, predominantly hardwoods, 25%. 1/ Average watershed precipitation from Thiessen weighted average of R-22 and R-22A. 2/ Snow water equivalent on March 3 was 5.59 inches and had completely melted by March 24. 3/ Precipitation records began in Sept. 1958; runoff records began in Oct. 1958. 4/ Mean P based on 69-yr (1895-1963) U.S. Weather record period at St. Johnsbury, Vt.																									
1964 DAILY AIR TEMPERATURE (degrees F)						NORTH DANVILLE, VERMONT WATERSHED W-2 67.02																			
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	19	-14	31	26	40	12	26	2	70	34	62	38	82	58	78	40	62	40	54	26	50	20	17	9	
2	26	14	30	6	44	30	38	4	68	32	64	40	76	50	68	56	64	36	56	36	46	24	22	8	
3	32	28	11	0	51	24	36	22	72	30	65	34	74	56	72	47	63	38	61	41	48	20	28	14	
4	37	16	27	11	48	24	24	12	74	34	55	44	76	56	74	42	58	48	67	36	48	22	26	20	
5	19	-4	32	22	54	35	42	3	72	40	57	34	66	54	64	52	64	50	44	26	36	24	25	22	
6	24	-4	32	10	33	14	40	12	76	40	72	30	70	54	63	42	64	46	50	20	40	36	24	8	
7	28	12	32	28	48	12	49	32	82	46	72	48	70	50	76	36	68	40	40	24	41	24	18	-5	
8	30	5	31	16	36	28	46	36	78	56	74	51	76	50	74	52	75	41	49	16	49	22	17	-6	
9	30	2	13	-6	35	25	34	32	75	56	74	48	77	50	53	38	70	50	54	32	49	24	25	2	
10	31	12	16	-10	24	18	50	30	58	48	78	46	78	50	66	36	62	52	46	30	38	28	21	4	
11	12	-4	20	-14	28	14	47	28	60	46	67	44	81	52	74	46	65	50	38	24	34	24	34	5	
12	6	-12	34	-6	30	15	58	24	72	44	74	46	80	56	71	58	53	32	48	20	43	35	44	34	
13	4	-12	30	7	32	10	64	32	72	44	72	46	72	58	59	38	60	26	44	40	58	38	40	34	
14	8	-3	28	12	40	10	54	48	56	42	64	53	76	60	60	38	62	28	48	34	40	28	40	16	
15	20	-12	30	0	42	26	54	38	68	32	62	44	78	58	57	42	51	30	72	28	32	21	26	4	
16	22	-2	22	4	26	12	48	32	74	44	56	39	80	56	70	42	52	27	73	38	36	24	16	-6	
17	26	4	18	0	32	6	40	30	68	48	61	46	86	56	72	50	56	32	70	34	32	26	35	18	
18	30	6	36	-6	24	10	58	34	64	44	70	40	90	60	66	46	56	39	63	42	36	18	28	4	
19	36	26	29	4	26	14	47	30	66	42	80	44	82	60	62	42	58	28	46	38	32	10	24	2	
20	38	28	26	16	34	20	40	30	62	36	84	56	78	52	62	42	60	26	44	32	42	20	30	16	
21	38	32	18	5	40	16	56	32	62	30	80	56	86	64	64	44	64	34	40	30	36	20	32	10	
22	34	18	14	-4	40	26	40	38	77	40	76	50	80	64	52	47	68	34	40	28	28	10	24	14	
23	32	10	32	-8	32	18	48	38	85	58	80	46	86	62	58	51	73	50	38	22	32	2	35	25	
24	42	28	30	2	43	12	46	40	84	65	78	60	70	62	70	50	68	48	36	26	32	18	44	35	
25	44	28	22	-10	40	30	50	38	64	46	68	46	72	60	74	44	52	38	52	32	39	30	52	44	
26	34	16	26	4	32	28	65	32	68	41	76	40	80	53	66	48	64	34	56	28	52	40	52	44	
27	26	14	10	-10	29	22	70	34	64	46	68	46	84	62	70	40	66	46	64	38	42	18	46	26	
28	18	6	28	-12	34	12	63	34	48	39	70	40	90	60	74	40	52	28	60	40	34	16	26	16	
29	18	2	30	16	40	20	64	26	47	34	76	40	86	56	80	48	48	28	52	39	42	24	24	7	
30	24	10	---	---	30	14	72	29	56	36	86	56	68	51	81	54	56	38	40	32	26	18	28	16	
31	30	6	---	---	22	8	---	---	62	34	---	---	68	45	78	60	---	---	38	25	---	---	---	34	14
AV.	26	8	25	4	36	18	47	28	68	42	70	45	78	56	68	46	61	38	51	31	40	23	30	15	
MEAN	17.0		14.5		27.0		37.5		55.0		57.5		67.0		57.0		49.5		41.0		31.5		22.5		
STA AV	24	5	27	5	34	16	47	28	65	40	74	47	76	53	73	49	66	42	56	35	41	26	25	8	
NOTES: TEMPERATURE DATA FROM R-12. READINGS TAKEN DAILY FROM HYGROTHERMOGRAPH CHARTS. STA AV (STATION AVERAGE) BASED ON 1960-64 RECORDS.																									

Cooperative Research Project of USDA and the Agricultural Experiment Station and the College of Technology, University of Vermont, and the Vermont Department of Water Resources

1964 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-2 67.02						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.23	.23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.11	.06	.00	.30	.00	.00	.17	.00	.00	.00	.00	.00
3	.01	.00	.00	.45	.00	.11	.45	.00	.00	.30	.00	.17
4	.06	.05	.40	.00	.00	.27	.00	.00	.35	.03	.00	1.07
5	.00	.18	1.09	.00	.00	.00	.05	.05	.05	.02	.45	.10
6	.13	.00	.00	.00	.00	.00	.10	.00	.00	.00	.01	.09
7	.01	.00	.00	.20	.00	.02	.00	.00	.00	.00	.00	.00
8	.00	.01	.00	.05	.08	.00	.00	.02	.12	.00	.00	.00
9	.48	.00	.37	.00	.39	.00	.00	.00	.02	.00	.00	.05
10	.29	.00	.72	.00	.13	.10	.00	.00	.00	.00	.10	.00
11	.00	.00	.00	.00	.10	.00	.04	.00	.10	.00	.20	.07
12	.00	.00	.00	.00	.00	.00	.00	1.40	.00	.00	.00	.03
13	.05	.13	.00	.00	.15	.00	.09	.00	.00	.06	.05	.05
14	.05	.05	.02	.52	.75	.00	.51	.10	.00	.00	.00	.00
15	.00	.00	.00	.22	.00	.25	.00	.16	.00	.00	.00	.08
16	.03	.29	.13	.00	.14	.05	.00	.00	.00	.00	.47	.00
17	.02	.00	.00	.34	.15	.00	.00	.14	.00	.14	.01	.03
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.10	.04	.03
19	.00	.05	.00	.00	.33	.00	.43	.00	.00	.25	.30	.00
20	.02	.00	.00	.00	.03	.00	.00	.05	.00	.00	.25	.00
21	.53	.05	.00	.00	.00	.00	.35	.00	.00	.51	.02	.00
22	.00	.00	.00	.75	.00	.00	.90	.97	.00	.02	.02	.10
23	.00	.00	.00	.05	.00	.00	.00	1.68	.00	.00	.00	.00
24	.00	.00	.00	.00	.11	.15	.00	.10	.00	.00	.00	.10
25	.63	.00	.08	.00	.41	.00	.00	.00	.00	.00	.00	.01
26	.04	.00	.75	.00	.14	.03	.00	.30	.00	.00	.90	.24
27	.00	.00	.02	.00	.21	.47	.00	.00	.38	.00	.00	.42
28	.00	.00	.35	.00	.05	.00	.00	.00	.00	.05	.01	.62
29	.00	.00	.00	.00	.00	.02	.05	.00	.00	.25	.14	.00
30	.03	-----	.00	.00	.00	.03	.00	.00	.00	.00	.00	.11
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.10
TOTAL	2.72	1.08	3.93	2.88	3.18	1.50	2.97	4.97	1.02	1.73	2.97	3.47
STA AV	2.35	2.33	1.67	3.06	2.53	2.42	3.37	3.62	2.21	3.85	3.54	2.52
NOTES: PRECIPITATION VALUES ARE FOR R-22A. ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. STA AV (STATION AVERAGE) BASED ON 1959-64 RECORDS.												
1964 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-2 67.02						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.06	.12	.03	.26	.30	.14	.04	.02	.03	.03	.06	.71
2	.05	.12	.04	.26	.30	.15	.05	.02	.03	.03	.06	.05
3	.04	.11	.07	.27	.35	.14	.10	.02	.03	.48	.05	.05
4	.04	.10	.23	.26	.38	.27	.08	.01	.08	.03	.05	.07
5	.04	.10	5.05	.28	.33	.16	.06	.02	.06	.02	.10	.08
6	.05	.10	.69	.23	.29	.14	.06	.02	.03	.03	.14	.08
7	.04	.10	.42	.69	.31	.13	.05	.01	.03	.03	.09	.08
8	.04	.10	.37	1.29	.33	.12	.06	.01	.03	.03	.08	.09
9	.05	.10	.37	.53	.52	.12	.04	.01	.04	.03	.07	.10
10	.04	.09	.28	.70	.39	.12	.04	.01	.03	.03	.08	.09
11	.04	.08	.27	.64	.40	.10	.03	.01	.04	.03	.09	.08
12	.04	.08	.26	.67	.29	.09	.03	.34	.03	.03	.11	.10
13	.04	.07	.26	.81	.22	.10	.03	.11	.02	.03	.09	.12
14	.04	.07	.26	1.37	.72	.11	.13	.05	.02	.04	.08	.13
15	.04	.07	.49	1.10	.31	.12	.08	.08	.03	.03	.05	.11
16	.04	.07	.33	.67	.27	.15	.03	.05	.02	.03	.10	.09
17	.04	.07	.28	.88	.39	.08	.02	.04	.03	.03	.09	.09
18	.04	.07	.23	.70	.23	.08	.02	.04	.03	.07	.05	.16
19	.04	.06	.22	.55	.35	.07	.10	.03	.03	.07	.04	.39
20	.05	.05	.32	.53	.30	.07	.03	.03	.03	.05	.17	.08
21	.27	.05	.38	.49	.24	.06	.05	.02	.03	.22	.12	.07
22	.11	.05	.38	1.01	.23	.15	.32	.22	.03	.10	.10	.07
23	.09	.05	.32	.73	.19	.04	.11	.88	.03	.07	.07	.07
24	.06	.05	.30	.60	.16	.06	.06	.38	.03	.06	.07	.13
25	.48	.04	.34	.55	.41	.06	.06	.10	.03	.05	.09	4.03
26	.30	.04	.53	.49	.21	.05	.05	.16	.03	.04	.88	1.04
27	.17	.04	.34	.42	.26	.18	.04	.09	.04	.04	.27	.35
28	.14	.04	.29	.42	.26	.06	.30	.06	.06	.04	.14	.27
29	.14	.04	.30	.40	.21	.05	.30	.05	.03	.06	.23	.21
30	.13	-----	.31	.37	.17	.05	.30	.04	.03	.09	.12	.17
31	.12	-----	.29	-----	.16	-----	.02	.04	-----	.05	-----	.15
MEAN	.12	.07	.46	.61	.31	.11	.09	.10	.03	.06	.12	.30
INCHES	.478	.353	2.321	2.963	1.549	.512	.312	.484	.168	.260	.615	1.414
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.1630258. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE ADJUSTED DUE TO ICE JAMS AT THE WEIR.												

1964 SELECTED RUNOFF EVENT			NORTH DANVILLE, VERMONT				WATERSHED W-2 67.02			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of July 22-23, 1964										
7-22	.02	1.40062	7-22	RG	R-22A		7-22	1715	.05	.0000
				1715	.00	.00		1800	.08	.0004
				1720	.96	.08		1815	.22	.0006
				1730	.00	.08		1820	.03	.0008
				1800	.06	.11		1827	.90	.0013
				1806	3.20	.43		1829	1.65	.0016
				1813	.86	.53		1845	3.86	.0066
				1820	2.83	.86		1850	4.31	.0089
				1830	.12	.68		1852	4.31	.0113
			OTHER	RAIN	GAGE	TOTAL		1915	3.30	.0199
				RG	R-22	.86		1925	2.68	.0233
				2 RG	AVG	.87		2000	1.56	.0318
								2022	1.03	.0350
								2035	.91	.0364
								2045	.78	.0373
								2115	.57	.0396
								2130	.48	.0405
								2200	.40	.0420
								2223	.36	.0430
								2245	.33	.0439
							7-23	2400	.26	.0464
								0045	.23	.0476
								0230	.19	.0513
								0700	.12	.0561
								1145	.10	.0597
								1330	.10	.0609
								1500	.08	.0618
								1645	.07	.0627
								3/1900	.05	.0637

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.006793. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1956-59, USDA MISC. PUB. 945, P. 67.2-4. 1/ RUNOFF PRIOR TO 1715 ON 7-22-64. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF SEE TABLES ON PREVIOUS PAGE. 2/ THIESSEN WEIGHTED USING 2 RAIN GAGES. 3/ BEGINNING OF NEXT EVENT.



MONTHLY PRECIPITATION AND RUNOFF (inches)							NORTH DANVILLE, VERMONT AREA - 2,067 ACRES (3.23 SQ. MILES)								WATERSHED W-3 67.03	
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/	2.78	1.35	4.43	2/ 3.48	4.16	1.95	3.39	5.29	1.33	2.34	3.53	3.38	37.41		
	Q	.91	.68	1.93	8.28	2.88	.91	.74	.87	.47	.65	1.09	1.33	20.74		
	STA AV 2/ P (60-64) Q	2.27	2.68	2.76	4.26	3.34	3.24	3.97	3.74	2.68	3.29	3.63	2.49	38.35		
		.97	.87	1.29	7.30	3.30	1.36	.84	.69	.54	1.11	1.39	1.11	20.77		
MEAN P 4/ 69 YR		2.35	2.14	2.47	2.68	2.94	3.46	3.64	3.59	3.45	2.87	3.01	2.46	35.06		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	4-14	.06	4-14	.06	4-14	.11	4-14	.32	4-14	.59	4-15	1.08	4-16	1.86	4-20	4.44
MAXIMUMS FOR PERIOD OF RECORD																
19 60 TO 19 64	4-21 1963	.07	4-21 1963	.07	4-21 1963	.13	4-14 1964	.32	4-14 1964	.59	4-15 1964	1.08	4-16 1964	1.86	4-20 1964	4.44
NOTES: Quality of records: P and Q excellent. Watershed conditions: Forest, predominantly hardwoods, 67%; pasture of mostly bluegrass, 19%; cultivated land consisting of clover, orchard grass, and timothy hay with very small areas in row crops, 11%; and idle land in tall grasses and woody plants, 3%. 1/ Thiessen weighted values using 6 rain gages. 2/ Snow water equivalent on Apr. 6 was 7.4 inches and had completely melted by Apr. 20. 3/ Records of P and Q began Jan. 1, 1960. STA AV P values are averages of Thiessen weighted monthly values. 4/ Mean P based on 69-yr (1895-1963) U.S. Weather Bureau record period at St. Johnsbury, Vt.																
1964 DAILY AIR TEMPERATURE (degrees F)							NORTH DANVILLE, VERMONT WATERSHED W 3 67.03									
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC				
	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN	MAX MIN				
1	22 -6	30 24	40 12	26 -2	68 34	62 41	84 58	72 40	62 42	58 28	48 22	14 6				
2	28 16	30 4	42 28	34 4	68 32	64 38	80 54	66 50	65 42	58 42	50 27	14 4				
3	32 26	10 0	52 26	35 22	72 32	64 36	76 58	70 46	64 42	62 38	50 26	28 14				
4	34 15	26 12	49 27	22 12	72 40	57 43	76 58	74 44	60 50	68 38	51 26	24 21				
5	17 0	32 24	50 34	38 3	72 40	58 36	68 56	62 50	64 49	46 26	38 28	23 20				
6	29 0	32 12	31 14	42 14	74 40	72 34	72 56	66 44	64 46	52 23	40 36	20 6				
7	30 12	30 28	48 14	52 32	80 46	70 46	72 52	76 42	70 46	42 24	40 30	12 -2				
8	28 6	30 16	34 26	54 35	76 52	76 52	78 51	71 52	78 46	51 22	50 28	18 -1				
9	30 10	14 -2	34 21	34 28	73 56	76 50	74 52	52 39	72 52	56 36	47 28	23 4				
10	32 10	15 -14	22 16	46 28	56 47	76 45	76 48	64 40	62 54	46 30	37 26	23 8				
11	10 -4	24 -8	28 13	46 28	58 44	69 42	78 50	72 48	67 46	38 24	34 22	34 9				
12	6 -10	33 2	26 14	56 26	70 42	76 50	78 55	72 56	56 32	48 22	47 34	42 34				
13	5 -6	34 12	30 10	62 32	74 46	72 50	68 59	59 40	60 29	45 40	56 34	38 32				
14	6 -3	26 10	38 12	52 46	54 40	62 48	74 57	60 38	66 34	48 35	37 28	36 16				
15	18 2	26 0	38 24	54 36	66 34	64 43	74 56	56 44	54 30	72 33	32 19	25 0				
16	22 0	22 4	26 7	46 34	74 44	56 38	78 51	70 44	52 30	72 40	36 24	18 -6				
17	22 6	18 -2	34 4	44 30	66 48	62 42	80 54	70 50	60 34	70 42	28 22	34 19				
18	28 10	35 2	24 10	61 36	64 42	72 40	84 59	68 46	55 37	64 46	32 14	25 4				
19	35 24	30 10	22 12	46 28	68 45	84 49	78 54	63 42	60 30	50 38	32 12	24 3				
20	38 26	24 14	36 18	38 28	60 36	86 60	76 48	60 43	61 29	44 33	40 18	26 16				
21	37 30	16 4	38 16	54 31	60 26	81 58	84 58	64 47	66 36	40 32	33 19	27 10				
22	34 16	14 2	40 22	38 36	76 40	82 52	80 62	52 47	68 38	40 28	24 2	24 12				
23	33 13	30 -2	34 14	44 36	86 60	82 52	83 60	59 51	74 51	36 26	29 2	33 24				
24	40 26	27 -2	42 12	42 36	83 62	78 60	66 58	70 50	66 44	36 24	30 14	43 33				
25	42 24	24 -8	40 28	46 32	62 43	70 46	70 55	74 47	50 36	50 34	38 27	50 44				
26	30 14	28 4	32 26	62 31	68 38	76 44	76 50	64 46	62 34	58 32	48 36	50 42				
27	24 14	12 -6	26 18	72 36	62 43	70 45	82 61	70 46	62 45	64 41	39 16	41 24				
28	20 4	30 -6	34 6	69 38	48 39	72 44	86 59	73 45	54 31	59 44	32 16	24 14				
29	22 2	28 14	39 18	64 32	50 36	76 46	82 51	79 48	49 30	58 38	38 21	23 8				
30	22 12	---	28 12	70 29	60 39	88 57	66 42	80 54	56 36	38 33	22 14	28 18				
31	32 6	---	22 2	---	64 38	---	68 40	76 57	---	38 26	---	33 12				
AV.	26 10	25 5	35 17	48 28	67 42	72 46	76 54	67 46	62 39	52 33	39 22	28 14				
MEAN	18.0	15.0	26.0	38.0	54.5	59.0	65.0	56.5	50.5	42.5	30.5	21.0				
STA AV	22 4	23 2	34 15	45 24	61 38	71 48	73 52	69 49	64 42	56 36	39 25	23 9				
NOTES: TEMPERATURE DATA IS FROM R-3. READINGS TAKEN DAILY FROM HYGRO THERMOGRAPH CHARTS. FOR OTHER TEMPERATURE RECORDS SEE PAGE 67.5-1 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1960-64 RECORDS.																

Cooperative Research Project of USDA and the Agricultural Experiment Station and the College of Technology, University of Vermont, and the Vermont Department of Water Resources

1964 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-3 67.03						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.22	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.06	.06	.00	.34	.00	.00	.25	.00	.00	.00	.00	.00
3	.01	.00	.00	.51	.00	.15	.50	.00	.00	.35	.00	.15
4	.06	.08	.42	.00	.00	.31	.00	.00	.47	.07	.00	.92
5	.00	.23	.03	.00	.00	.04	.14	.07	.05	.03	.47	.08
6	.14	.00	.00	.00	.00	.00	.02	.00	.00	.00	.02	.09
7	.01	.09	.00	.30	.00	.14	.10	.00	.00	.00	.00	.03
8	.00	.05	.00	.07	.10	.00	.00	.65	.12	.00	.00	.01
9	.44	.00	.44	.00	.45	.00	.00	.01	.03	.00	.00	.07
10	.36	.00	.81	.03	.25	.19	.14	.00	.00	.05	.14	.00
11	.00	.00	.10	.00	.15	.00	.08	.00	.25	.05	.20	.14
12	.00	.00	.00	.00	.00	.00	.00	.70	.00	.00	.00	.05
13	.04	.06	.00	.00	.43	.00	.14	.00	.00	.15	.15	.05
14	.07	.05	.02	.72	.62	.02	.27	.13	.00	.00	.00	.10
15	.00	.00	.10	.27	.00	.26	.00	.20	.00	.00	.00	.04
16	.04	.23	.00	.00	.25	.04	.00	.00	.00	.00	.75	.00
17	.01	.00	.00	.38	.15	.00	.00	.07	.00	.20	.04	.05
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.40	.07	.09
19	.00	.05	.00	.00	.27	.00	.45	.00	.00	.21	.33	.00
20	.03	.00	.00	.03	.12	.00	.00	.05	.00	.00	.26	.00
21	.37	.06	.00	.00	.00	.00	.52	.00	.00	.59	.05	.00
22	.02	.00	.00	.83	.00	.00	.48	1.09	.00	.01	.04	.10
23	.00	.00	.00	.07	.00	.00	.00	1.76	.00	.00	.00	.00
24	.00	.04	.00	.00	.29	.24	.00	.06	.00	.00	.00	.10
25	.66	.00	.16	.00	.41	.01	.00	.00	.00	.00	.00	.05
26	.09	.00	.43	.00	.13	.10	.00	.29	.00	.00	1.10	.20
27	.03	.00	.04	.00	.43	.49	.00	.00	.55	.00	.00	.45
28	.00	.00	.00	.00	.09	.00	.00	.00	.00	.02	.03	.49
29	.00	.00	.48	.00	.00	.05	.16	.03	.00	.30	.12	.00
30	.03	-----	.02	.00	.00	.05	.00	.00	.00	.01	.00	.11
31	.00	-----	.00	-----	.00	.00	.00	.00	-----	.00	-----	.18
TOTAL	2.69	1.27	4.45	3.55	4.14	2.09	3.25	5.11	1.47	2.64	3.77	3.16
STA AV	2.62	2.58	2.81	3.55	3.29	3.44	3.37	4.01	2.67	4.40	4.05	2.81

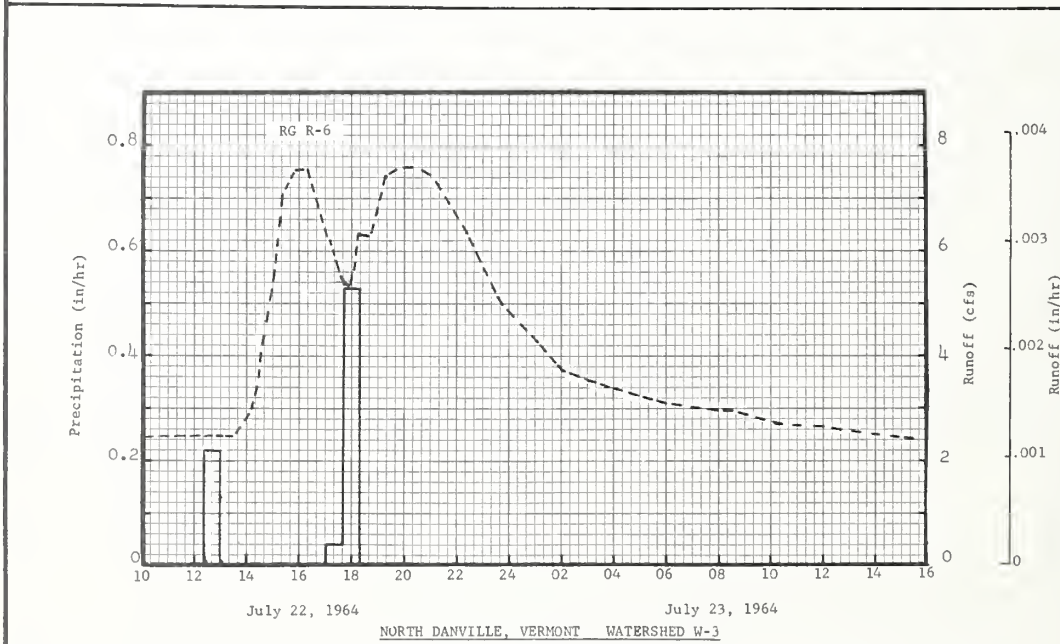
NOTES: PRECIPITATION VALUES ARE FOR R-16. ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. FOR OTHER PRECIPITATION RECORDS SEE PAGE 67.5 2 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1959-64 RECORDS.

1964 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-3 67.03						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	2.28	2.58	1.96	3.60	10.99	3.73	1.60	1.13	1.36	1.36	1.90	2.30
2	2.26	2.50	1.86	3.39	9.77	3.54	1.71	1.15	1.30	1.36	1.77	4.60
3	2.20	2.43	2.03	3.37	8.81	3.26	4.39	1.15	1.19	2.03	1.73	2.18
4	2.30	2.43	2.39	3.11	8.15	6.04	3.16	1.11	1.62	1.58	1.73	2.37
5	2.24	2.35	39.09	3.39	7.40	4.14	2.22	1.15	1.83	1.47	2.11	2.52
6	2.18	2.24	16.53	3.26	6.85	3.41	2.11	1.11	1.39	1.41	3.22	2.58
7	2.18	2.24	7.23	5.14	6.40	3.16	2.11	1.07	1.26	1.36	2.26	2.39
8	2.11	2.28	5.61	16.24	6.31	3.16	2.15	1.92	1.28	1.36	2.00	2.30
9	2.15	2.32	5.12	10.07	12.69	2.88	1.83	1.43	1.45	1.36	1.88	2.22
10	2.30	2.24	3.88	9.98	9.77	2.86	1.79	1.24	1.36	1.39	1.96	2.20
11	2.11	2.07	4.56	14.55	11.03	2.99	1.75	1.11	1.68	1.39	2.03	2.20
12	1.94	2.07	3.99	20.22	7.10	2.56	1.73	2.22	1.64	1.43	2.50	2.92
13	1.98	2.07	3.63	34.16	6.21	2.45	1.64	2.15	1.34	1.49	2.20	2.92
14	1.94	2.07	3.58	81.12	25.97	2.45	2.39	1.41	1.26	1.66	2.24	3.11
15	1.90	2.07	5.70	80.01	10.99	2.50	2.13	1.71	1.36	1.47	1.83	2.77
16	1.90	2.05	4.27	52.66	7.74	3.11	1.66	1.47	1.30	1.39	3.35	2.62
17	1.90	1.98	4.29	40.26	11.03	2.35	1.64	1.36	1.28	1.43	4.24	2.49
18	1.90	1.98	3.67	43.67	6.74	2.11	2.32	1.30	1.28	3.33	2.50	2.32
19	1.94	1.98	3.39	35.33	8.11	1.98	3.05	1.13	1.24	2.24	2.09	3.31
20	2.03	1.98	3.37	24.28	8.36	1.92	3.41	1.17	1.15	2.09	3.28	2.62
21	4.07	1.98	3.37	24.49	5.89	1.86	2.03	1.13	1.17	3.84	2.73	2.13
22	3.20	1.98	3.48	48.60	5.38	1.79	4.14	3.82	1.30	2.84	2.18	2.11
23	2.62	1.94	3.54	38.89	4.56	1.68	2.79	22.25	1.28	2.43	1.98	2.07
24	2.58	1.94	3.52	24.83	3.95	1.83	1.88	9.13	1.22	2.00	2.05	2.45
25	6.10	1.90	4.46	22.08	12.33	2.05	1.66	2.56	1.22	1.94	2.03	9.60
26	5.86	1.90	6.27	21.76	5.85	1.81	1.58	2.77	1.26	1.96	19.12	17.86
27	3.26	1.86	5.57	21.02	6.68	3.58	1.49	2.20	1.28	1.77	9.90	11.29
28	2.88	1.75	4.16	18.48	7.55	2.03	1.30	1.66	2.39	1.73	3.69	5.46
29	2.75	1.73	3.92	15.28	5.50	1.79	1.30	1.49	1.56	1.73	3.75	4.33
30	2.88	-----	3.71	13.04	4.37	1.75	1.39	1.41	1.45	2.77	3.03	4.10
31	2.60	-----	3.48	-----	3.20	-----	1.22	1.41	-----	2.00	-----	3.69
MEAN	2.60	2.10	5.54	24.54	8.27	2.69	2.12	2.49	1.39	1.86	3.24	3.81
INCHES	.906	.685	1.931	8.282	2.884	.909	.738	.870	.469	.649	1.095	1.327

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0115151. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE ADJUSTED DUE TO ICE JAMS AT THE WEIR.

1964 SELECTED RUNOFF EVENT			NORTH DANVILLE, VERMONT				WATERSHED W-3 67.03			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
<u>Event of July 22-23, 1964</u>										
7-22	.00	1/.0116	7-22	RG	R-6		7-22	1248	2.43	.0000
				1223	.00	.00		1300	2.43	.0002
				1300	.22	.10		1334	2.43	.0009
				1659	.60	.10		1404	2.92	.0015
				1743	.04	.13		1415	3.01	.0018
				1819	.53	.45				
			OTHER	RAIN	GAGE	TOTALS		1422	3.43	.0019
<u>Watershed conditions:</u> 67% forest; 13% pastured land; 11% hay with about 6-inch growth since last cutting; and 3% idle land with dense grass and brush growth.				RG	R-1	.15		1437	4.03	.0024
				RG	R-3	.49		1454	5.10	.0030
				RG	R-16	.48		1503	5.31	.0034
								1524	7.15	.0044
				RG	R-20	.58		1540	7.45	.0053
				RG	R-20A	.57		1547	7.75	.0057
			6 RG	AVG	2/	.44		1619	7.75	.0076
								1702	6.31	.0100
								1756	5.31	.0124
								1801	5.57	.0127
								1810	6.31	.0131
								1840	6.31	.0146
								1913	7.45	.0163
								2100	7.45	.0226
								2223	6.31	.0270
								2334	5.10	.0302
								2400	4.86	.0312
							7-23	0116	4.22	.0339
								0200	3.78	.0353
								0348	3.43	.0383
								0600	3.11	.0417
								0741	3.01	.0441
								0816	3.01	.0450
								1032	2.71	.0480
								1326	2.62	.0516
								21513	2.43	.0537

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.0004798. FOR MAP OF WATERSHED SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1960-61, USDA MISC. PUB. 994, PP. 67.3-5. FOR ISOHYETAL MAP OF ABOVE EVENT SEE PP. 67.5-5 OF THIS VOLUME. 1/ RUNOFF PRIOR TO 1248 ON 7-22-64. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF SEE TABLES ON PREVIOUS PAGE. 2/ THIESSEN WEIGHTED USING 6 RAIN GAGES. 3/ BEGINNING OF NEXT EVENT.



MONTHLY PRECIPITATION AND RUNOFF (inches)						NORTH DANVILLE, VERMONT AREA - 27,469 ACRES (42.92 SQ. MILES)								WATERSHED W-5 67.05										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL											
1964 P 1/	2.63	1.16	4.21	2/ 3.22	3.74	1.97	3.28	4.93	1.18	2.19	3.26	3.31	35.08											
Q 2/ P	2.71	.78	2.64	5.52	2.16	.42	.29	.54	.18	.28	.76	1.35	17.63											
STA AV 2/ P	2.07	2.32	2.55	3.68	3.04	2.91	3.28	3.48	2.42	3.09	2.71	2.33	33.88											
(60-64) Q	1.86	1.38	2.57	6.62	2.66	.88	.52	.44	.34	.93	1.18	1.33	20.71											
MEAN P 4/ 69 YR	2.35	2.44	2.47	2.68	2.94	3.46	3.64	3.59	3.45	2.87	3.01	2.46	35.06											
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																								
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																					
	DATE	RATE	1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS									
1964	3-5	.03	3-5	.03	3-5	.07	3-5	.19	3-6	.34	4-15	.64	4-16	1.12	4-20	2.75								
MAXIMUMS FOR PERIOD OF RECORD																								
19 60 TO 19 64	4-18 1960	.04	4-18 1960	.04	4-18 1960	.08	10-7 1962	.20	10-7 1962	.38	10-6 1962	.70	4-16 1964	1.12	4-12 1960	3.14								
Notes: Quality of records: P and Q excellent. Watershed conditions: Forest, predominantly hardwoods, 67%; cultivated land consisting of mostly clover, orchard grass, and timothy hay with very little in row crops, 17%; pasture of mostly bluegrass, 13%; idle land in tall grasses and woody plants, 2%; and homesites and roads, 1%. 1/ Monthly P values are arithmetic averages using 24 rain gages. 2/ Snow water equivalent on Apr. 6 was 5.2 inches and had completely melted by April 20. 3/ Runoff records began Jan. 1, 1960; precipitation records began at various times, averages computed from gages with records from Jan. 1, 1960 to Dec. 31, 1962; P values are arithmetically averaged monthly values. 4/ Mean P based on 69-yr (1895-1963) U.S. Weather Bureau record period at St. Johnsbury, Vt.																								
1964 DAILY AIR TEMPERATURE (degrees F)						NORTH DANVILLE, VERMONT WATERSHED W-5 67.05																		
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	22	6	27	22	34	20	22	3	64	40	56	44	78	59	68	44	62	42	54	32	46	25	10	2
2	24	16	27	4	46	26	28	8	64	40	60	44	71	56	72	50	63	42	52	40	48	29	19	0
3	28	22	10	-1	55	36	26	17	68	40	60	38	72	58	64	46	60	41	58	42	46	30	22	12
4	29	12	18	6	50	36	18	8	72	46	52	40	72	56	68	45	58	50	64	46	46	28	18	16
5	15	5	22	16	50	38	33	6	72	52	55	36	64	54	62	52	61	48	44	24	41	32	18	14
6	26	6	28	14	36	16	33	17	74	48	68	38	68	54	62	44	62	46	44	24	38	34	16	3
7	26	10	26	24	40	20	42	28	82	58	66	48	68	54	70	44	62	44	38	22	36	32	16	2
8	26	10	26	14	30	22	44	30	76	63	70	52	73	52	66	50	72	50	42	22	46	31	16	4
9	26	16	14	-2	30	18	29	26	72	60	68	51	70	54	50	42	66	52	50	32	42	32	18	3
10	27	10	15	-6	18	12	44	26	59	51	70	42	70	52	60	42	60	52	44	30	34	27	20	10
11	8	-5	24	-2	22	11	43	28	57	48	64	40	76	54	67	49	63	46	36	24	34	26	30	16
12	6	-10	30	9	22	14	50	30	70	46	71	46	73	57	66	52	52	32	44	27	50	34	33	24
13	3	-2	30	17	26	12	52	34	68	52	68	52	64	58	56	40	53	30	42	38	56	36	32	26
14	6	-4	24	10	32	14	46	40	56	44	58	50	68	58	56	39	56	37	46	34	42	32	30	18
15	15	2	26	6	34	20	46	31	66	40	60	43	72	57	52	42	50	33	67	38	36	26	20	-2
16	20	8	19	3	22	10	42	30	72	52	53	36	73	54	66	44	50	30	68	49	40	30	16	-6
17	20	12	18	0	28	6	39	27	66	50	58	42	76	56	66	50	56	38	64	51	34	26	32	19
18	24	14	30	8	18	12	54	31	64	48	68	40	80	61	64	45	52	40	60	48	36	22	26	0
19	30	22	25	14	17	8	40	24	66	48	79	52	74	54	60	44	54	32	49	38	30	20	19	0
20	34	24	22	12	30	14	33	26	59	38	80	62	72	50	57	42	56	35	43	36	32	17	18	12
21	34	27	15	4	31	17	53	32	60	31	76	56	78	58	60	45	59	40	40	34	26	12	20	8
22	30	18	14	3	34	20	40	36	74	46	75	56	76	60	50	46	62	44	39	31	20	4	20	9
23	30	18	29	3	28	14	44	38	82	64	75	56	78	60	56	48	66	51	32	26	23	12	26	20
24	38	28	24	0	34	14	42	36	82	64	71	58	62	56	64	50	61	46	32	21	25	14	36	26
25	39	24	20	-4	34	24	44	36	64	45	66	48	65	54	68	48	46	38	42	30	34	24	43	36
26	28	14	25	10	26	20	60	34	66	40	70	46	71	52	60	48	58	35	53	33	40	32	44	38
27	24	14	14	2	20	15	68	42	63	45	66	46	76	58	66	46	58	42	60	45	31	16	37	21
28	16	2	26	6	26	9	63	42	50	38	68	44	80	62	67	48	50	32	56	50	27	16	22	9
29	20	-2	26	12	31	16	60	36	48	34	70	48	76	54	72	51	46	38	54	38	32	17	19	4
30	20	12	-----	-----	24	9	66	36	56	38	81	58	62	46	76	54	52	36	36	30	18	10	28	16
31	28	12	-----	-----	18	6	-----	-----	60	38	-----	-----	64	40	72	56	-----	-----	36	28	-----	-----	28	18
AV.	24	11	23	7	31	17	43	28	66	47	67	47	72	55	63	47	58	41	49	34	36	24	24	12
MEAN	17.5	-----	15.0	-----	24.0	-----	35.5	-----	56.5	-----	57.0	-----	63.5	-----	55.0	-----	49.5	-----	21.5	-----	30.0	-----	18.0	-----
STA AV	26	5	23	7	32	17	43	28	65	46	68	48	72	55	64	48	59	42	50	34	36	24	24	13
NOTES: TEMPERATURE VALUES ARE FROM R-1. READINGS TAKEN DAILY FROM HYGROTHERMOGRAPH CHARTS. FOR OTHER TEMPERATURE RECORDS SEE PAGES 67.2-1 AND 67.3-1 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1960-64 RECORDS.																								

Cooperative Research Project of USDA and the Agricultural Experiment Station and the College of Technology, University of Vermont, and the Vermont Department of Water Resources

1964 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-5 67.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.16	.32	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
2	.19	.17	.00	.37	.00	.00	.19	.00	.00	.00	.00	.00
3	.02	.01	.00	.56	.00	.15	1.25	.00	.00	.40	.00	.20
4	.13	.15	.43	.04	.00	.48	.00	.00	.33	.06	.00	1.04
5	.00	.43	1.07	.00	.00	.02	.00	.05	.05	.04	.46	.09
6	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.06
7	.06	.12	.00	.26	.00	.05	.30	.02	.00	.00	.00	.00
8	.00	.01	.00	.10	.14	.03	.00	.55	.19	.00	.00	.03
9	.33	.05	.50	.04	.72	.00	.00	.00	.06	.00	.00	.08
10	.54	.00	.90	.03	.35	.30	.00	.00	.00	.07	.10	.00
11	.03	.00	.19	.00	.15	.00	.10	.00	.34	.14	.17	.14
12	.00	.00	.02	.00	.00	.00	.00	1.62	.00	.00	.03	.06
13	.06	.07	.03	.00	.43	.00	.09	.00	.00	.18	.15	.06
14	.14	.13	.05	.75	.72	.00	.29	.11	.00	.00	.00	.09
15	.00	.00	.16	.35	.00	.23	.00	.27	.00	.00	.00	.12
16	.08	.30	.08	.00	.17	.12	.00	.00	.00	.00	.49	.00
17	.04	.00	.00	.45	.23	.00	.00	.15	.00	.15	.05	.09
18	.00	.00	.05	.00	.00	.00	.00	.00	.00	.40	.09	.14
19	.00	.10	.05	.00	.30	.00	.46	.00	.00	.19	.34	.00
20	.10	.01	.00	.00	.25	.00	.00	.10	.00	.00	.26	.05
21	.46	.14	.00	.00	.00	.00	.40	.00	.00	.62	.06	.00
22	.02	.00	.03	.76	.05	.00	.22	1.15	.00	.05	.04	.15
23	.03	.00	.00	.06	.00	.00	.00	1.85	.00	.00	.00	.00
24	.00	.08	.00	.00	.50	.19	.00	.10	.00	.00	.00	.15
25	.65	.00	.18	.00	.55	.07	.00	.00	.05	.00	.00	.05
26	.11	.06	.76	.00	.13	.10	.00	.34	.00	.00	1.21	.10
27	.05	.00	.06	.00	.48	.55	.00	.00	.60	.00	.04	.45
28	.00	.00	.09	.00	.15	.00	.00	.00	.00	.00	.02	.69
29	.01	.00	.61	.00	.00	.00	.20	.10	.00	.36	.17	.00
30	.03	-----	.05	.00	.00	.05	.00	.00	.00	.01	.03	.09
31	.04	-----	.00	-----	.00	-----	.00	.05	-----	.00	-----	.30
TOTAL	3.38	2.15	5.31	3.77	5.21	2.34	3.50	5.84	1.62	2.67	3.73	4.25
STA AV	3.11	3.52	3.60	4.06	3.74	3.85	3.84	4.15	2.67	4.49	4.46	3.18
NOTES: PRECIPITATION VALUES ARE FOR R-1, ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. STA AV (STATION AVERAGE) BASED ON 1959-64 RECORDS.												
1964 DAILY PRECIPITATION (inches)						NORTH DANVILLE, VERMONT WATERSHED W-5 67.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.18	.20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.04	.04	.00	.26	.00	.00	.15	.00	.00	.00	.00	.00
3	.00	.01	.00	.38	.00	.09	.65	.00	.00	.17	.00	.18
4	.05	.08	.35	.02	.00	.25	.00	.00	.30	.04	.00	.96
5	.00	.11	1.58	.00	.00	.00	.05	.02	.00	.01	.44	.06
6	.10	.00	.00	.03	.00	.00	.02	.00	.00	.00	.01	.11
7	.00	.05	.00	.20	.00	.01	.11	.00	.10	.00	.00	.03
8	.00	.00	.00	.06	.00	.00	.00	.03	.00	.00	.00	.00
9	.33	.00	.34	.05	.39	.00	.00	.00	.00	.00	.00	.04
10	.27	.00	.57	.00	.04	.05	.00	.00	.00	.02	.10	.00
11	.00	.00	.08	.00	.10	.00	.02	.00	.09	.02	.20	.08
12	.00	.00	.00	.00	.00	.00	.00	.75	.00	.00	.00	.03
13	.03	.05	.00	.00	.10	.00	.05	.00	.00	.15	.06	.04
14	.02	.05	.02	.50	.78	.00	.37	.03	.00	.00	.00	.06
15	.00	.00	.00	.41	.00	.34	.00	.17	.00	.00	.00	.03
16	.01	.21	.00	.00	.15	.03	.00	.00	.00	.00	.40	.01
17	.04	.00	.00	.26	.15	.00	.00	.00	.00	.17	.03	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.11	.04	.01
19	.00	.06	.00	.00	.45	.00	.42	.00	.00	.32	.31	.00
20	.03	.02	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00
21	.84	.04	.00	.00	.00	.00	.27	.00	.00	.55	.00	.00
22	.03	.00	.00	.78	.00	.00	.84	.78	.00	.03	.00	.05
23	.00	.00	.00	.02	.00	.00	.00	1.87	.00	.00	.00	.00
24	.00	.00	.00	.00	.05	.63	.00	.14	.00	.00	.00	.10
25	.60	.00	.07	.00	.15	.00	.00	.00	.00	.00	.00	.00
26	.02	.03	.68	.00	.12	.05	.00	.25	.00	.00	.76	.25
27	.00	.00	.04	.00	.16	.55	.00	.00	.30	.00	.00	.32
28	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.04	.41
29	.00	.00	.40	.00	.00	.00	.05	.00	.00	.45	.10	.00
30	.00	-----	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05
31	.00	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.09
TOTAL	2.59	.95	4.13	2.97	2.68	2.00	3.00	4.04	.79	2.04	2.74	2.92
STA AV	2.12	1.98	2.17	2.91	2.10	2.48	3.19	3.58	2.11	3.47	3.36	2.13
NOTES: PRECIPITATION VALUES ARE FOR R-11, ALL PRECIPITATION IN DEC., JAN., FEB., AND MAR. IS SNOW OR RAIN ON SNOW. FOR OTHER PRECIPITATION RECORDS SEE PAGES 67.3-2 AND 67.2-2 OF THIS PUBLICATION. STA AV (STATION AVERAGE) BASED ON 1959-64 RECORDS.												

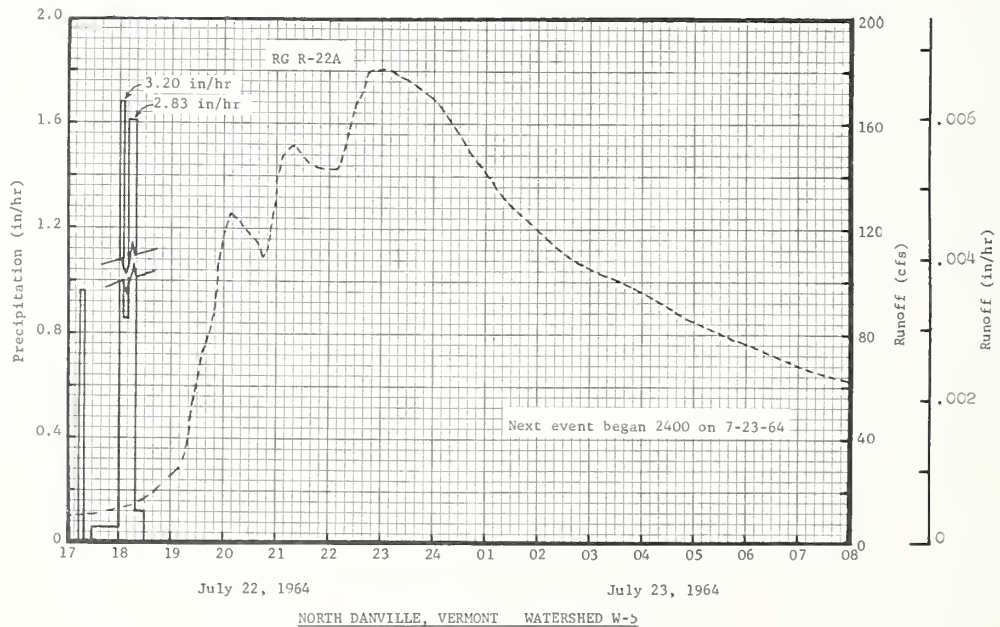
1964 MEAN DAILY DISCHARGE (cfs)						NORTH DANVILLE, VERMONT WATERSHED W-5 67.05						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	24.95	69.47	14.46	47.92	104.63	24.10	7.37	3.97	8.51	6.80	11.34	16.73
2	39.98	67.48	15.31	42.53	95.55	23.82	6.24	3.69	7.65	6.24	10.77	13.04
3	56.99	56.14	19.00	31.76	87.61	20.98	9.64	3.69	6.80	9.36	9.92	15.31
4	62.66	49.62	51.32	29.72	81.38	51.60	19.85	3.12	7.94	10.21	9.64	19.85
5	60.11	46.50	662.07	42.81	75.14	39.98	11.06	3.12	14.18	7.94	10.21	25.24
6	40.83	37.71	388.74	52.74	68.90	23.82	9.92	3.40	10.21	7.09	26.65	28.35
7	37.43	32.61	207.84	68.05	66.06	20.41	8.79	2.83	8.22	6.52	17.30	25.52
8	32.32	28.08	134.11	221.63	63.80	20.13	9.92	2.55	7.37	6.52	13.89	24.95
9	26.65	24.95	98.10	162.19	111.43	17.86	8.22	5.67	8.22	6.24	12.47	26.67
10	37.14	24.38	98.96	141.20	106.89	16.16	6.80	4.25	7.66	6.24	12.47	23.25
11	36.29	30.34	76.84	183.17	109.16	17.86	6.80	3.40	8.22	6.52	13.89	22.97
12	26.37	46.78	76.84	215.21	79.39	14.74	6.52	10.49	10.77	6.52	17.30	26.65
13	22.97	63.80	66.63	328.21	63.23	13.04	5.95	34.02	8.22	6.80	16.73	48.20
14	21.55	42.25	63.23	651.01	240.16	12.76	9.07	10.21	6.80	8.22	15.31	38.28
15	19.85	27.80	91.30	652.15	131.28	12.76	13.33	8.79	5.95	7.94	13.04	26.09
16	19.00	27.50	88.18	428.43	84.22	19.28	8.51	9.36	5.67	7.37	13.32	25.52
17	19.00	24.95	62.09	330.33	110.58	13.89	6.24	7.37	5.95	7.09	50.75	35.16
18	19.56	22.68	51.04	333.16	73.72	11.62	4.82	6.80	6.24	13.32	20.70	26.09
19	19.85	21.83	36.84	293.47	81.09	10.77	8.79	5.67	6.24	14.74	13.61	32.61
20	20.70	21.83	40.26	209.54	101.79	9.92	9.07	4.82	5.67	14.46	36.01	38.56
21	173.24	21.55	47.63	181.47	67.48	8.79	6.80	4.25	5.10	28.92	29.20	32.61
22	344.22	20.70	61.81	357.83	55.57	7.04	36.86	9.92	5.10	23.82	17.58	42.25
23	284.39	19.28	64.36	373.42	41.68	7.09	54.44	241.86	5.10	16.44	11.06	34.02
24	122.20	18.15	66.63	219.74	28.92	7.65	13.89	134.97	4.82	13.32	17.30	38.56
25	187.70	17.01	63.80	184.02	95.55	10.21	10.49	30.34	4.25	11.62	15.59	15.45
26	503.85	17.01	86.20	174.09	64.65	8.79	8.51	22.97	5.10	10.77	159.63	269.93
27	449.98	16.44	109.16	169.56	64.08	21.26	7.66	20.13	4.54	10.77	164.74	179.20
28	205.57	14.74	85.91	159.63	79.96	13.61	6.52	13.33	9.92	9.92	54.44	78.54
29	118.24	15.03	64.36	135.82	56.99	9.36	5.39	10.77	9.64	10.21	51.04	75.42
30	96.12	-----	61.24	116.82	36.01	8.51	5.39	9.64	8.22	14.30	32.32	77.69
31	75.99	-----	58.41	-----	26.94	-----	4.82	8.79	-----	13.89	-----	72.02
MEAN	103.41	31.95	100.41	217.92	82.38	16.09	10.89	20.68	7.28	10.75	29.94	46.86
INCHES	2.713	.784	2.636	5.516	2.161	.422	.286	.545	.184	.282	.760	1.348

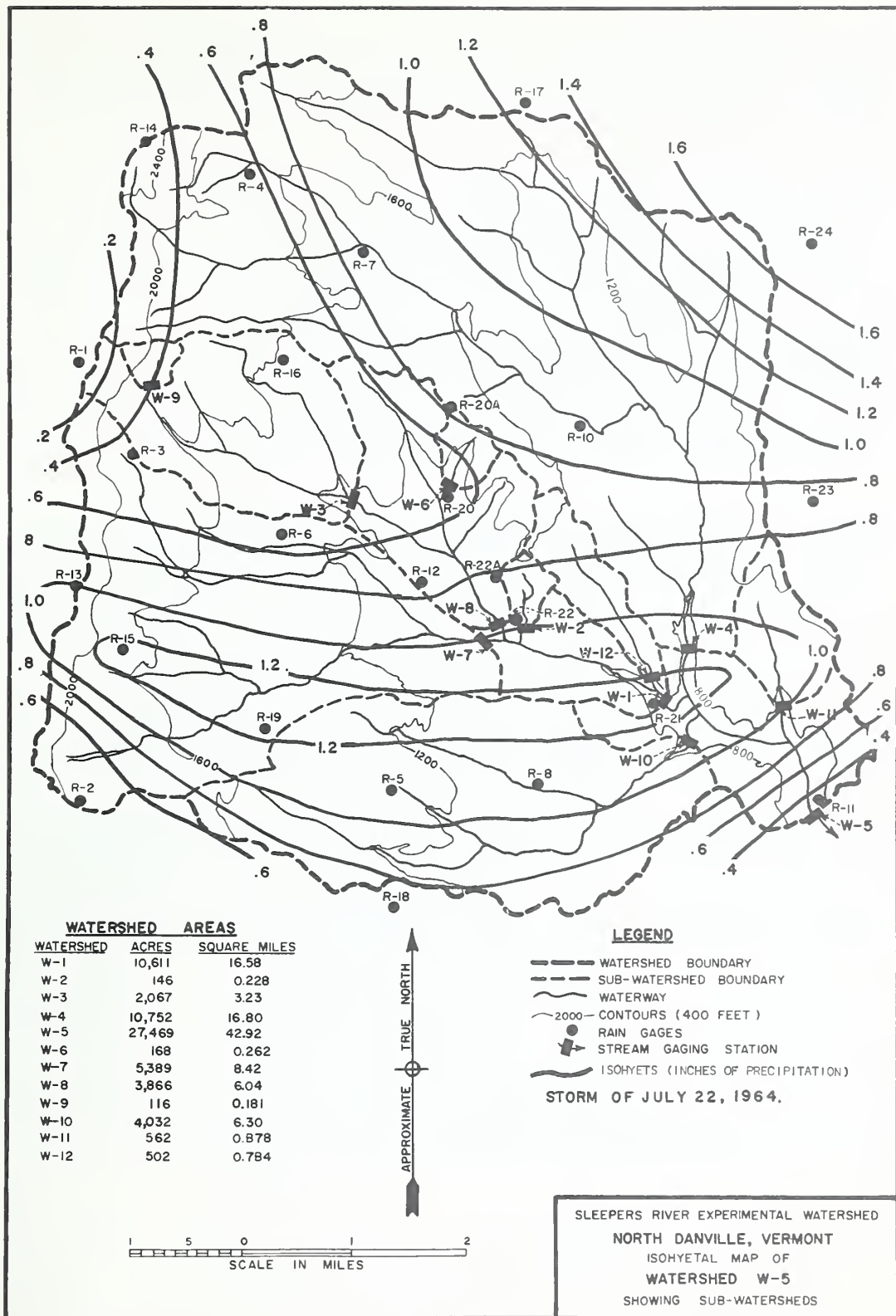
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY 0.0008665. RECORDS ARE EXCELLENT. SOME PERIODS OF WINTER RECORDS ARE ADJUSTED DUE TO ICE JAMS AT THE CONTROL SECTION.

1964			SELECTED RUNOFF EVENT				NORTH DANVILLE, VERMONT				WATERSHED W-5				67.05	
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)						
Event of July 22, 23, 1964																
7-22	.02	1/.0067	7-22	RG	R-22A		7-22	1730	11.62	.0000						
				1715	.00	.00					1753	13.04	.0001			
				1720	.96	.08					1815	14.46	.0003			
				1730	.00	.08					1830	17.30	.0004			
				1800	.06	.11					1845	20.41	.0006			
				1806	3.20	.43										
				1813	.86	.53					1910	28.07	.0009			
				1820	2.83	.86					1922	49.62	.0012			
				1830	.12	.88					1935	70.03	.0016			
											1940	78.54	.0018			
7-22	.07		7-22	RG	R-1		7-22	2000	117.67	.0030						
				1745	.00	.00					2008	125.61	.0036			
				1750	1.56	.13					2015	125.61	.0041			
				1800	.12	.15					2038	115.68	.0057			
											2045	113.70	.0062			
				RG	R-11											
				1715	.00	.00					2053	119.65	.0067			
				1740	.72	.30					2100	138.65	.0073			
				1800	.00	.30					2108	147.44	.0079			
											2115	149.71	.0085			
7-22	.04		7-22	OTHER	RAIN	GAGE	TOTALS	7-22	2122	149.71	.0092					

1964 SELECTED RUNOFF EVENT			NORTH DANVILLE, VERMONT				WATERSHED W-5 67.05			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Watershed conditions: 67% forest; 17% hay with average of 6-inch growth since last cutting; 13% pastured land; 2% idle land with dense grass and brush growth; and 1% homesites and roads.			Event of July 22, 23, 1964 (Continued)							
			23	RG	AVG 1/	.86	7-23	0053	145.17	.0293
								0130	129.86	.0323
								0245	108.03	.0375
								0330	100.66	.0403
								0500	85.63	.0452
								0600	76.84	.0481
								0650	70.03	.0502
								0815	62.38	.0536
								1000	49.62	.0570
								1200	37.43	.0601
								1330	31.47	.0619
								1615	24.67	.0647
								1830	22.68	.0665
								2108	20.41	.0686
								2/2400	18.43	.0705

NOTES: TO CONVERT RUNOFF IN CFS TO IN/HR, MULTIPLY BY 0.000036104. FOR ISOHYETAL MAP OF ABOVE EVENT SEE NEXT PAGE. FOR 30-DAY ANTECEDENT RAINFALL AND RUNOFF, SEE PP. 67.5-2 AND 3. 1/ ARITHMETIC AVERAGE OF 23 RAIN GAGES. 2/ BEGINNING OF NEXT EVENT.





MONTHLY PRECIPITATION AND RUNOFF (inches)						REYNOLDS, IDAHO WATERSHED W-1 (68 036068) AREA — 57,700 ACRES (90.2 SQ. MILES)								
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	
1964 P ₁ Q	2.93 .147	0.27 .098	1.14 .217	1.01 .656	0.91 .679	2.05 .464	0.07 .041	0.20 .009	0.26 .006	0.41 .010	3.07 .036	5.12 1.394	17.44 3.757	
STA AVG P MEAN 26 YR P ₃														
	1.32	1.33	1.32	1.16	1.29	0.89	0.21	0.16	0.39	0.84	1.20	1.32	11.43	

ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS

YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	12-23	.065	12-23	.064	12-23	.125	12-23	.270	12-23	.327	12-23	.453	12-23	.721	12-23	1.161

MAXIMUMS FOR PERIOD OF RECORD

19 63 TO	12-23		12-23		12-23		12-23		12-23		12-23		12-23		12-23	
19 64	1964	.065	1964	.064	1964	.125	1964	.270	1964	.327	1964	.453	1964	.721	1964	1.161

Notes: Watershed conditions: Predominately sagebrush rangeland, 95%; small stands of forest, 2%; permanent fields of flood irrigated alfalfa, 3%. 1/ Precipitation data based on Thiessen weighted average for 20 gages of a master rain gage network of 92 gages. 2/ Lengths of record not sufficient to establish Sta Av. 3/ Mean P based on 26-yr (1939-1964) U.S. Weather Bureau record period at Boise, Idaho; 50 miles NE of watershed.

1964 DAILY AIR TEMPERATURE (degrees F)												REYNOLDS, IDAHO WATERSHED W-1 (68 036068)												
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	50	20	42	27	42	18	46	38	53	35	78	50	82	45	71	48	65	44	70	39	54	38	51	37
2	44	33	37	23	33	20	41	27	45	30	74	49	81	54	82	39	64	34	75	26	52	30	44	32
3	38	18	38	18	36	25	52	28	48	22	76	46	80	44	88	46	21	--	66	34	53	22	39	27
4	32	23	34	15	44	26	57	24	52	23	72	56	76	50	88	50	--	--	70	26	59	32	39	23
5	38	15	30	19	40	24	52	30	50	36	73	52	76	48	84	44	--	--	74	30	57	28	39	21
6	38	33	33	14	34	22	50	33	54	24	68	48	84	44	89	41	--	--	78	34	58	22	37	17
7	35	20	46	22	32	17	54	23	54	30	56	47	90	48	90	52	--	--	80	36	57	25	38	13
8	32	14	49	26	32	20	62	24	60	34	58	44	91	49	92	54	--	--	70	47	59	31	35	21
9	39	13	52	26	32	28	64	32	68	30	52	38	85	55	92	52	--	--	68	36	56	32	40	27
10	29	19	52	22	32	28	63	30	66	44	55	44	83	45	86	53	--	--	76	35	50	33	45	31
11	28	18	4	29	45	27	60	26	62	29	63	43	90	49	92	61	74	58	70	28	42	29	36	22
12	29	2	3	20	37	22	54	31	77	36	64	44	91	54	87	62	80	36	75	33	41	25	31	19
13	28	1	34	23	34	24	60	51	76	40	70	39	85	65	84	46	80	39	76	38	36	20	36	23
14	22	11	37	18	44	32	72	32	72	38	70	46	89	51	78	43	41	--	76	44	33	16	42	25
15	32	7	36	20	46	24	70	38	74	33	64	46	86	55	84	41	--	--	55	42	32	14	42	16
16	39	10	32	22	54	47	66	28	85	38	61	50	82	46	84	46	--	--	51	23	39	7	35	-11
17	36	25	42	30	60	32	46	14	84	44	62	38	90	47	92	46	--	--	53	18	39	18	12	-12
18	35	24	46	28	48	27	50	20	80	36	60	42	90	62	88	52	--	--	58	20	41	14	21	2
19	42	25	42	32	45	23	58	25	82	50	60	41	85	51	76	41	--	--	64	23	45	18	44	18
20	41	39	38	20	49	30	64	31	80	56	62	35	92	48	70	37	--	--	70	26	44	13	47	35
21	40	28	47	19	42	24	53	31	76	38	60	41	84	56	77	43	64	--	72	26	45	15	54	38
22	29	22	42	25	40	24	50	32	66	32	72	38	84	45	86	46	74	37	64	28	46	22	57	45
23	29	25	46	20	40	18	46	23	65	28	82	40	82	46	86	45	75	44	65	22	46	22	51	43
24	32	18	44	29	40	24	47	32	70	35	90	46	81	48	82	54	78	42	65	21	54	33	49	42
25	42	32	34	15	40	30	50	30	70	30	86	50	84	45	90	46	73	45	59	24	48	29	46	32
26	44	34	39	16	44	32	51	40	67	33	86	59	92	48	84	52	73	35	52	31	36	26	47	33
27	40	26	40	18	46	20	66	28	62	42	84	47	88	46	72	37	70	27	59	28	36	26	44	28
28	30	24	48	16	56	25	71	32	54	46	72	44	90	50	65	44	72	31	65	35	44	28	32	20
29	32	21	42	22	62	30	71	46	61	50	81	42	88	60	79	32	78	36	61	43	56	32	30	24
30	38	20	---	---	64	36	54	41	70	46	78	48	90	49	65	37	78	43	56	36	52	32	34	25
31	35	19	---	---	68	38	---	---	76	43	---	---	76	44	57	45	---	---	54	31	---	---	28	11
AV.	35	21	41	22	44	26	57	30	66	37	70	45	85	50	82	46	--	--	66	31	47	24	40	23
MEAN	28.0		31.4		35.4		43.4		51.5		57.4		67.7		64.1		---	---	48.6		35.7		31.4	
STA AV	34	14	44	26	47	27	55	28	67	40	72	44	85	48	83	47	80	42	64	34	50	26	41	22

NOTES: TEMP DATA ARE BASED ON REYNOLDS CLIMATOLOGICAL STATION, PUBLISHED IN U.S. WEATHER BUREAU CLIMATOLOGICAL DATA FOR IDAHO, VOL 67. STA AV BASED ON RECORDS FROM JAN. 1962 THROUGH DEC. 1964. 4/ MAR. TEMP ARE BASED ON HYGROTHERMOGRAPH RECORD LOCATED AT REYNOLDS CLIMATOLOGICAL STATION. 5/ RECORD MISSING MORE THAN 10 DAYS IN SEPT.

1964 DAILY PRECIPITATION (inches)						REYNOLDS, IOAHO WATERSHEO W-1 (68 036068)						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	0.05	0.04	0.29	0.23	0.06	0.00	0.00	0.00	0.26	0.05	0.24	0.66
2	0.08	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.10
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
4	0.00	0.00	0.08	0.00	0.00	0.04	0.06	0.00	0.00	0.00	0.00	0.00
5	0.03	0.00	0.01	0.00	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00
6	0.53	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
7	0.05	0.00	0.02	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.22
9	0.14	0.00	0.08	0.02	0.05	0.63	0.00	0.00	0.00	0.00	0.00	0.11
10	0.01	0.02	0.02	0.09	0.03	0.05	0.00	0.00	0.00	0.00	0.20	1.02
11	0.00	0.01	0.09	0.16	0.00	0.09	0.00	0.00	0.00	0.00	0.02	0.00
12	0.00	0.01	0.11	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.11	0.00
13	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.04	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.20
15	0.00	0.13	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.03	0.00	0.03
16	0.07	0.01	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.01	0.02
17	0.30	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
18	0.07	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
19	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
20	0.03	0.00	0.12	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.01
21	0.17	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
22	0.08	0.00	0.04	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.29
23	0.04	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
24	0.21	0.00	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.60
25	0.19	0.00	0.08	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.23
26	0.04	0.00	0.01	0.00	0.26	0.00	0.01	0.07	0.00	0.03	0.27	0.19
27	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.24	0.09
28	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.24	0.06
29	0.54	0.00	0.00	0.20	0.05	0.00	0.00	0.00	0.00	0.17	0.44	0.04
30	0.00	-----	0.00	0.02	0.04	0.00	0.00	0.01	0.00	0.09	0.14	0.08
31	0.01	-----	0.00	-----	0.00	-----	0.00	0.07	-----	0.00	-----	0.05
TOTAL	2.93	0.27	1.14	1.01	0.91	2.05	0.07	0.20	0.26	0.41	3.07	5.12
STA AV	1/											

NOTES: PRECIPITATION VALUES ARE BASED ON THIESSEN WEIGHTED AVERAGES FOR 20 GAGES OF A MASTER RAIN GAGE NETWORK OF 92 GAGES. 1/ LENGTH OF RECORD NOT SUFFICIENT TO ESTABLISH STA AV.

1964 MEAN DAILY DISCHARGE (cfs)						REYNOLDS, IOAHO WATERSHEO W-1 (68 036068)						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	5.72	8.25	7.18	<u>110.5</u>	55.97	46.31	<u>8.28</u>	.99	<u>.72</u>	.61	1.16	32.57
2	8.31	6.81	7.04	54.16	41.74	35.18	7.78	.87	.66	.63	1.03	23.85
3	4.15	6.17	5.90	42.95	33.28	31.56	6.76	.91	.63	.62	.98	14.84
4	5.75	7.27	7.60	49.39	29.51	32.58	5.53	.92	.61	.63	<u>.94</u>	8.59
5	4.00	6.86	7.73	45.17	21.65	32.15	7.50	.98	.61	.62	.98	9.29
6	13.25	<u>6.08</u>	5.93	37.25	<u>19.37</u>	37.74	6.68	.90	.61	.60	1.02	6.59
7	5.69	<u>7.70</u>	5.86	38.90	19.75	55.54	5.08	.82	.59	<u>.59</u>	1.17	<u>6.12</u>
8	<u>3.97</u>	7.11	<u>5.76</u>	57.81	19.62	52.55	4.48	.75	.58	<u>.59</u>	1.22	9.32
9	6.76	8.42	7.06	73.15	24.20	63.87	4.47	.69	.61	.63	1.33	9.62
10	6.26	<u>11.42</u>	6.57	74.13	43.58	<u>69.27</u>	4.39	.68	.45	.64	1.75	49.34
11	6.48	11.08	6.53	60.08	45.29	64.07	3.25	.72	.38	.64	2.02	45.53
12	10.09	8.87	10.22	44.71	51.39	59.63	2.55	.72	.39	.63	2.08	15.91
13	4.47	8.31	6.40	47.49	62.35	48.57	2.43	.76	<u>.36</u>	.62	1.84	11.47
14	4.38	7.38	6.56	68.69	61.11	47.72	2.46	.80	<u>.36</u>	.64	1.48	15.66
15	4.43	8.14	9.71	81.55	67.54	46.28	2.02	.78	<u>.36</u>	.70	1.30	14.09
16	4.38	7.86	7.45	73.61	76.40	44.58	2.02	.77	.43	.72	1.66	8.08
17	5.01	7.33	22.25	62.63	75.29	39.25	1.78	.77	.45	.84	1.72	8.10
18	4.29	8.34	25.06	54.03	81.79	43.79	1.58	.69	.45	.88	1.51	11.25
19	29.72	9.86	18.12	57.33	86.63	37.35	1.61	.64	.47	.90	1.65	20.07
20	30.15	8.53	17.56	59.55	82.66	35.66	1.46	.66	.47	.93	1.64	13.80
21	13.57	9.69	19.97	54.59	74.54	39.74	1.53	.63	.49	.94	1.52	30.38
22	6.48	10.45	16.56	49.28	58.39	31.33	1.45	.62	.49	.93	1.75	579.9
23	5.30	9.93	14.82	35.97	50.02	26.59	1.57	.57	.46	.87	1.83	<u>982.8</u>
24	6.22	10.08	14.01	33.77	47.36	22.48	1.48	.56	.47	.88	3.05	575.7
25	66.14	7.96	13.77	30.51	45.81	22.08	1.43	.53	.45	.88	<u>10.95</u>	225.8
26	<u>49.74</u>	7.51	13.91	26.89	47.98	16.92	1.38	.66	.46	.92	8.31	195.7
27	<u>12.39</u>	6.44	13.64	26.43	69.64	11.65	1.34	.59	.45	.91	5.16	131.0
28	8.67	7.45	17.95	31.01	71.38	11.74	1.46	.56	.52	.91	7.29	95.96
29	7.84	6.51	37.39	50.10	61.53	10.58	1.52	.52	.65	.94	8.71	86.93
30	6.71	-----	67.22	60.12	62.20	<u>8.53</u>	1.10	.52	.61	.98	9.19	79.61
31	6.14	-----	<u>96.50</u>	-----	58.62	-----	.95	.88	-----	.96	-----	64.26
MEAN	11.50	8.20	16.98	53.06	53.12	37.51	3.22	0.72	0.51	0.77	2.88	109.1
INCHES	.147	.098	.217	.656	.679	.464	.041	.009	.006	.010	.036	1.394

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000412. TO CONVERT DISCHARGE IN IN. TO AC-FT., MULTIPLY BY 4820. MAX AND MIN FLOWS EACH MONTH ARE UNDERLINED.

1964 SELECTED RUNOFF EVENT			REYNOLDS, IDAHO WATERSHED W-1 (68 036068)							
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of December 21-27, 1964										
12-21	0.00	1/.015	12-21	RG	155016		12-22			
				1650	0.00	0.00		0230	109.52	0.0000
				1740	0.02	0.02		0245	125.97	0.0005
				1800	0.06	0.04		0300	144.03	0.0010
				1900	0.02	0.06		0315	173.74	0.0017
				2215	0.00	0.06		0330	231.06	0.0026
				2315	0.08	0.14		0345	261.91	0.0036
				2400	0.17	0.27		0400	324.03	0.0049
			12-22	0015	0.24	0.33		0415	356.96	0.0064
				0250	0.29	1.07		0430	389.00	0.0080
				0600	0.13	1.48		0445	418.19	0.0097
Watershed conditions: Runoff event occurred from precipitation and warm wind following a period of freezing temperatures, snow-fall and frozen soils.										
				0715	0.02	1.51		0500	447.22	0.0116
				0815	0.08	1.59		0515	497.22	0.0136
				0900	0.23	1.76		0530	534.34	0.0158
				0945	0.04	1.79		0545	589.64	0.0182
				1015	0.12	1.85		0600	600.09	0.0208
				1100	0.03	1.87		0615	617.97	0.0234
				1235	0.00	1.87		0630	621.62	0.0260
				1250	0.04	1.88		0645	627.12	0.0287
				1740	0.00	1.88		0700	627.12	0.0314
				1815	0.10	1.94		0715	627.12	0.0341
				1845	0.06	1.97		0730	627.12	0.0368
				2015	0.14	2.18		0745	621.62	0.0395
				2100	0.20	2.33		0800	617.97	0.0421
				2200	0.35	2.68		0815	612.55	0.0448
				2250	0.38	3.00		0830	600.09	0.0474
				2330	0.24	3.16		0845	591.37	0.0500
				2400	0.42	3.37		0900	582.79	0.0525
			12-23	0030	0.30	3.52		0915	562.81	0.0549
				0100	0.16	3.60		0930	549.94	0.0573
				0115	0.12	3.63		0945	549.94	0.0597
				0615	0.00	3.63		1000	545.20	0.0620
				0645	0.20	3.73		1015	549.94	0.0644
				0705	0.06	3.75		1030	562.81	0.0668
				0750	0.04	3.78		1045	584.50	0.0692
				1135	0.00	3.78		1100	634.54	0.0719
				1155	0.24	3.86		1115	676.80	0.0747
				1210	0.44	3.97		1130	715.01	0.0777
				1220	0.36	4.03		1145	729.42	0.0808
				1250	0.08	4.07		1200	715.01	0.0835
				1400	0.04	4.12		1215	715.01	0.0865
				1420	0.30	4.22		1230	706.85	0.0900
				1440	0.15	4.27		1245	696.73	0.0930
				1535	0.05	4.32		1300	680.75	0.0960
				1555	0.09	4.35		1315	668.94	0.0988
				1625	0.04	4.37		1330	655.38	0.1017
				1720	0.04	4.41		1345	632.68	0.1045
				1835	0.00	4.41		1400	608.96	0.1071
				1855	0.12	4.45		1415	582.79	0.1097
				1930	0.05	4.48		1430	557.94	0.1121
				2045	0.01	4.49		1445	537.42	0.1145
				2200	0.02	4.52		1500	504.47	0.1167
				2220	0.12	4.56		1515	468.63	0.1188
				2315	0.04	4.60		1530	444.35	0.1208
			12-24	2400	0.04	4.63		1545	437.14	0.1227
				0030	0.06	4.66		1600	432.79	0.1245
				0145	0.12	4.81		1615	407.92	0.1263
				0245	0.21	5.02		1630	397.67	0.1281
				0445	0.29	5.60		1645	393.32	0.1298
				0545	0.13	5.73		1700	393.32	0.1315
				0645	0.05	5.78		1715	389.00	0.1331
				0800	0.03	5.82		1730	387.57	0.1348
				1000	0.01	5.84		1745	368.54	0.1364
				1200	0.02	5.88		1800	368.54	0.1380
				1400	0.01	5.90		1815	367.28	0.1396
				1415	0.04	5.91		1830	364.82	0.1412

NOTES: TO CONVERT CFS TO IN/HR., MULTIPLY BY .00001717. FOR MAP OF WATERSHED, SEE HYDROLOGIC DATA FOR EXPERIMENTAL AGRICULTURAL WATERSHEDS IN THE UNITED STATES, 1963, USDA MISC. PUB. 1164, P. 68.1-8. 1/ RUNOFF DEC. 21, 1964 AND PRIOR TO 0230 ON DEC. 22, 1964.

1964			SELECTED RUNOFF EVENT				REYNOLDS, IOAHO WATERSHEO W-1 (68 036068)			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of December 21-27, 1964—Continued										
				1615	0.00	5.91		1845	362.45	0.1427
				1625	0.12	5.93		1900	362.45	0.1443
				2100	0.01	5.98		1915	361.30	0.1458
				2300	0.02	6.01		1930	360.17	0.1474
				2400	0.02	6.03		1945	360.17	0.1489
			12-25	0441	0.00	6.03		2000	389.00	0.1505
				0525	0.03	6.05		2015	410.85	0.1523
				0630	0.04	6.09		2030	447.22	0.1541
				0700	0.06	6.12		2045	482.87	0.1561
				0900	0.01	6.13		2100	566.08	0.1583
				1045	0.02	6.16		2115	623.45	0.1609
				1230	0.02	6.20		2130	670.90	0.1637
				1315	0.00	6.20		2145	756.62	0.1667
				1600	0.01	6.22		2200	825.66	0.1701
				1730	0.01	6.24		2215	900.03	0.1738
				2108	0.00	6.24		2230	1074.20	0.1781
			12-26	2400	0.01	6.28		2245	1173.85	0.1829
				1702	0.00	6.28		2300	1370.08	0.1884
				1800	0.05	6.33		2315	1910.01	0.1954
				1952	0.05	6.43		2330	2943.81	0.2058
			12-27	2050	0.06	6.49		2345	3651.84	0.2200
				2215	0.11	6.64		2400	3737.63	0.2358
				0315	0.00	6.64	12-23	0015	3782.25	0.2520
				1217	0.01	6.70		0030	3801.43	0.2683
				1350	0.04	6.76		0045	3720.17	0.2844
								0100	3614.25	0.3002
								0115	3504.27	0.3154
								0130	3363.37	0.3302
								0145	3309.54	0.3445
								0200	3158.23	0.3584
								0215	2988.29	0.3716
								0230	2802.16	0.3840
								0245	2571.71	0.3955
								0300	2279.73	0.4060
								0315	1895.03	0.4145
								0330	1706.64	0.4227
								0345	1608.11	0.4298
								0400	1500.08	0.4364
								0415	1352.32	0.4426
								0430	1219.87	0.4481
								0445	1079.66	0.4530
								0500	996.11	0.4575
								0515	966.44	0.4617
								0530	883.96	0.4657
								0545	859.03	0.4694
								0600	832.28	0.4730
								0615	752.41	0.4764
								0630	684.72	0.4795
								0645	674.83	0.4824
								0700	665.05	0.4853
								0715	665.05	0.4882
								0730	627.12	0.4909
								0745	608.96	0.4936
								0800	596.59	0.4962
								0815	571.03	0.4987
								0830	551.53	0.5011
								0845	546.78	0.5035
								0900	540.52	0.5058
								0915	574.36	0.5082
								0930	566.08	0.5106
								0945	566.08	0.5131
								1000	566.08	0.5155
								1015	557.94	0.5179
								1030	542.07	0.5203
								1045	526.72	0.5226

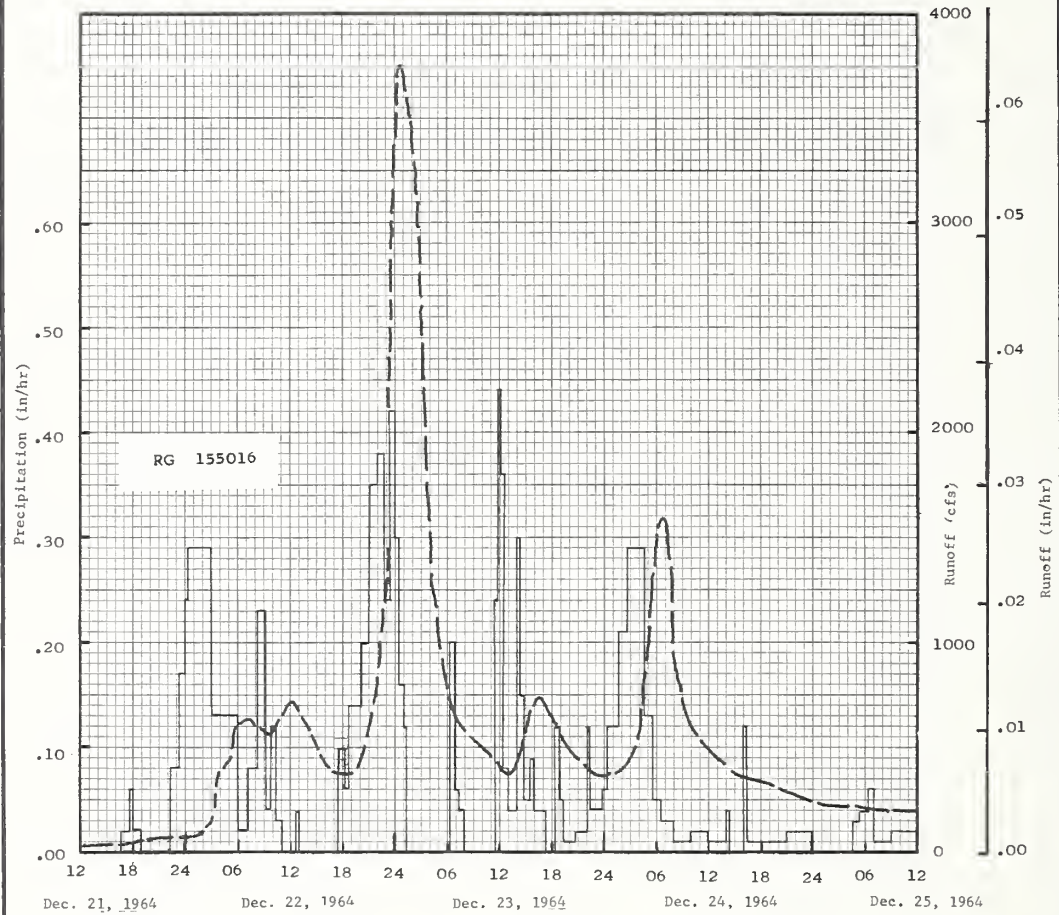
NOTES: TO CONVERT CFS TO IN/HR., MULTIPLY BY .00001717.

1964			SELECTED RUNOFF EVENT				REYNOLDS, IOAHO WATERSHED W-1 (68 036068)			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
Event of December 21-27, 1964—Continued										
								1100	507.39	0.5248
								1115	500.11	0.5270
								1130	490.02	0.5291
								1145	461.52	0.5311
								1200	454.38	0.5331
								1210	445.79	0.5344
								1215	440.03	0.5350
								1225	412.32	0.5362
								1245	393.32	0.5385
								1300	381.92	0.5402
								1315	389.00	0.5419
								1330	399.13	0.5436
								1345	399.13	0.5453
								1400	407.92	0.5470
								1415	415.26	0.5488
								1430	424.05	0.5506
								1445	432.79	0.5524
								1500	504.47	0.5544
								1515	591.37	0.5568
								1530	684.72	0.5595
								1545	719.11	0.5625
								1600	737.74	0.5657
								1615	746.10	0.5688
								1630	752.41	0.5721
								1645	754.51	0.5753
								1700	756.62	0.5785
								1745	756.62	0.5883
								1800	729.42	0.5915
								1815	704.82	0.5945
								1830	617.97	0.5974
								1845	577.72	0.6000
								1900	546.78	0.6024
								1915	517.72	0.6047
								1930	517.72	0.6069
								1945	523.70	0.6091
								2000	522.20	0.6114
								2015	511.80	0.6136
								2030	504.47	0.6158
								2045	490.02	0.6179
								2100	472.90	0.6200
								2115	458.67	0.6220
								2145	451.52	0.6259
								2200	418.19	0.6277
								2215	396.22	0.6295
								2230	384.73	0.6312
								2300	379.15	0.6344
								2400	372.41	0.6409
							12-24	0100	371.10	0.6473
								0200	371.10	0.6537
								0300	400.59	0.6603
								0315	422.58	0.6620
								0330	444.35	0.6639
								0345	484.30	0.6659
								0400	534.34	0.6681
								0415	627.12	0.6706
								0430	746.10	0.6735
								0445	799.43	0.6768
								0500	827.86	0.6803
								0515	983.63	0.6842
								0530	1167.93	0.6888
								0545	1334.94	0.6942
								0600	1492.25	0.7003
								0615	1620.93	0.7070
								0630	1654.76	0.7140
								0700	1633.48	0.7281

NOTES: TO CONVERT CFS TO IN/HR., MULTIPLY BY .00001717.

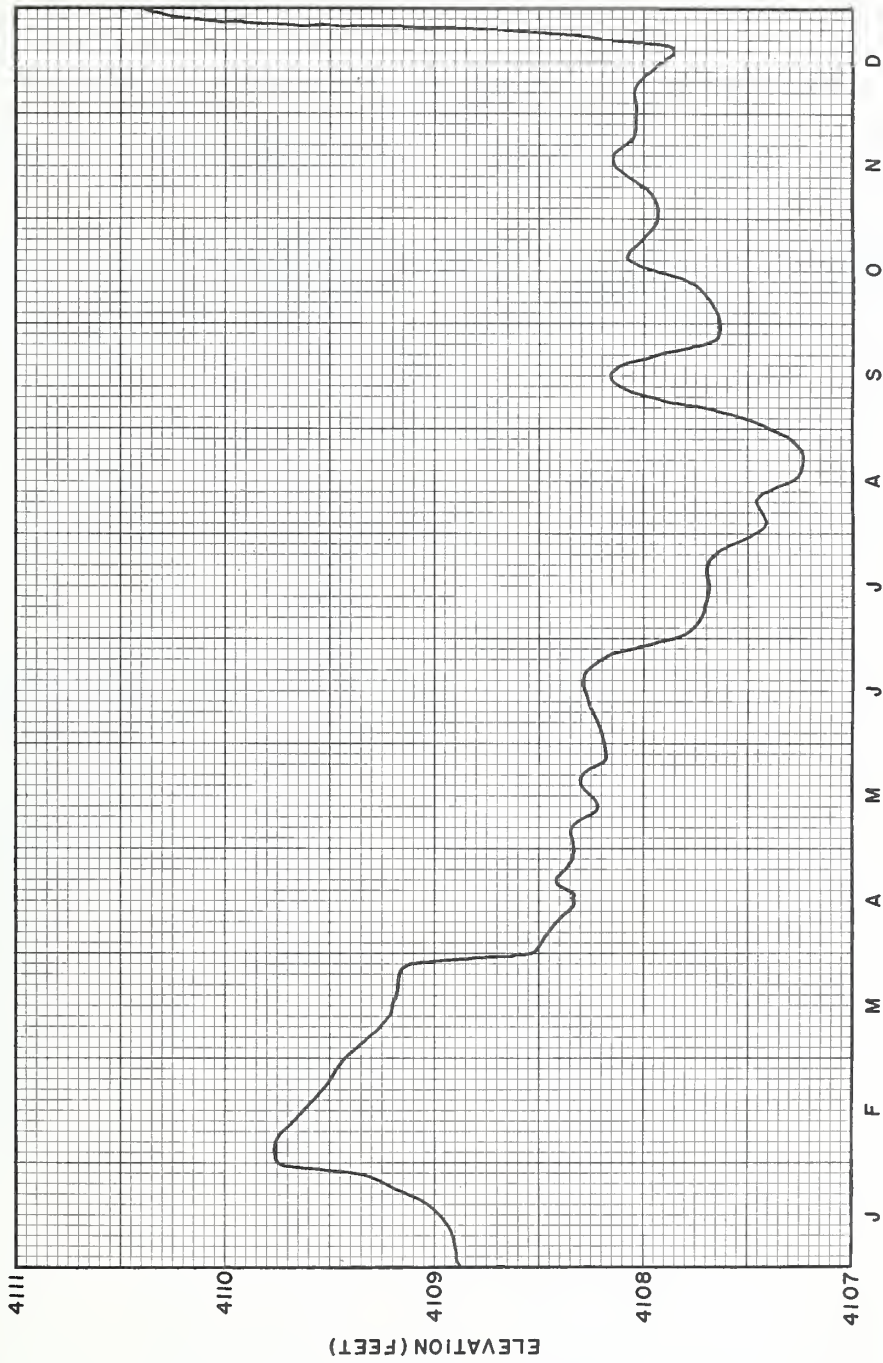
1964			SELECTED RUNOFF EVENT				REYNOLDS, IDAHO WATERSHED W-1 (68 036C68)			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (cfs)	ACC. (inches)
			Event of December 21-27, 1964—Continued							
								0715	1612.37	0.7351
								0730	1472.96	0.7417
								0745	1245.15	0.7475
								0800	1047.47	0.7525
								0815	1034.37	0.7569
								0830	996.11	0.7613
								0845	890.82	0.7653
								0900	784.32	0.7689
								0915	752.41	0.7722
								0930	725.29	0.7754
								0945	692.71	0.7785
								1000	661.16	0.7814
								1015	638.28	0.7842
								1030	617.97	0.7869
								1045	591.37	0.7894
								1100	562.81	0.7919
								1130	538.96	0.7967
								1145	516.23	0.7989
								1200	494.34	0.8011
								1215	488.59	0.8032
								1230	480.02	0.8053
								1245	475.75	0.8073
								1300	468.63	0.8094
								1315	462.94	0.8114
								1330	458.67	0.8133
								1345	452.96	0.8153
								1400	454.38	0.8172
								1430	434.24	0.8211
								1500	415.26	0.8247
								1530	410.85	0.8283
								1600	410.85	0.8318
								2400	264.60	0.8782
							12-25	0600	242.33	0.9043
								1200	221.35	0.9282
								2100	201.61	0.9609
								2400	201.61	0.9712
							12-26	0900	188.40	1.0014
								1100	211.91	1.0083
								1200	221.35	1.0120
								1400	221.35	1.0196
								1600	201.61	1.0268
								1700	192.74	1.0302
								1800	183.08	1.0335
								2300	166.70	1.0485
								2330	201.61	1.0501
								2400	232.30	1.0519
							12-27	0100	211.91	1.0557
								0200	183.08	1.0591
								0300	166.70	1.0621
								0500	143.13	1.0674
								0700	128.45	1.0721
								1200	121.91	1.0829
								1800	114.83	1.0951
								2100	102.22	1.1006
								2400	102.22	1.1059

NOTES: TO CONVERT CFS TO IN/HR., MULTIPLY BY .00001717.



REYNOLDS, IDAHO WATERSHED W-1 (68036068)

HYDROGRAPH - WELL NUMBER 1
(Grid Location O48039)



MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA AREA — 2,340,000 ACRES (3,656 SQ. MILES)								WATERSHED 100 AT ANADARKO		
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.018	.036	.023	.030	.090	.061	.004	.082	.035	.016	.331	.066	.792			
STA AV P1/ (61-64)Q2/	.042	.050	.049	.059	.088	.212	.040	.051	.100	.078	.168	.059	.996			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-8	.0021	11-8	.0021	11-8	.0042	11-8	.012	11-7	.025	11-7	.049	11-6	.094	11-5	.178
MAXIMUMS FOR PERIOD OF RECORD 4/																
1961 to 1964	6-12 1962	.0021	6-12 1962	.0021	6-12 1962	.0043	6-12 1962	.013	6-12 1962	.027	6-12 1962	.051	6-11 1962	.096	6-7 1962	.257
Notes: Watershed conditions not applicable. For maps, see Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. 1/ Since this is the inflow station to a study reach, these data are not applicable. 2/ Runoff records began Oct. 1961. 3/ Mean P based on 64-yr (1901-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — Nov. 8, 5,040 cfs (17.17 ft). Minimum — Aug. 1, no flow (6.10 ft). PERIOD OF RECORD: Maximum — June 12, 1962, 5,070 cfs (17.98 ft). Minimum — Aug. 1, 1964, no flow (6.10 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1964 — Nov. 8, 5,040 cfs (17.17 ft); Nov. 20, 3,340 cfs (13.48 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft. and discharge in cfs).																
GAGE HEIGHT		DISCHARGE		GAGE HEIGHT		DISCHARGE		GAGE HEIGHT		DISCHARGE		GAGE HEIGHT		DISCHARGE		
6.40		0.5		7.20		138		14.00		3,240		17.00		4,900		
6.50		3.0		8.00		510										
6.60		13		9.00		1,100										
6.80		41		11.00		1,980										
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 100 AT ANADARKO										
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	OEC			
1	64	78	74	67	122	* 602	47	.0	51	107	60	266				
2	62	74	77	66	102	492	44	32	* 44	75	56	256				
3	60	74	81	65	95	244	40	* 105	35	60	* 61	246				
4	58	94	81	73	86	178	34	* 54	31	51	212	242				
5	55	145	81	79	78	167	32	41	29	50	* 2000	233				
6	58	175	81	74	67	142	28	* 107	27	45	* 3890	229				
7	58	448	79	* 72	60	120	27	63	25	41	* 4650	229				
8	60	519	79	70	* 390	105	23	54	25	38	* 4300	* 221				
9	58	241	89	69	364	94	20	49	24	42	* 1320	217				
10	55	152	* 87	68	269	107	* 18	44	23	42	* 561	225				
11	58	* 124	84	68	466	112	16	43	22	42	425	229				
12	46	110	80	70	* 1980	107	13	36	21	48	* 342	233				
13	38	103	77	72	1680	110	12	* 31	20	48	294	225				
14	* 46	100	73	73	739	107	8.4	28	19	48	270	221				
15	53	95	73	73	430	* 107	5.4	36	35	48	256	221				
16	50	95	67	80	265	576	3.9	23	48	48	245	213				
17	50	87	64	83	205	387	2.2	* 11	45	49	330	202				
18	51	83	65	83	185	896	1.8	* 189	49	48	* 1320	186				
19	65	81	68	84	170	392	* 5	* 1730	49	43	* 2620	186				
20	64	78	68	284	151	232	* 5	* 2700	97	* 41	* 3020	175				
21	62	78	68	203	128	137	.8	* 1290	312	41	* 2200	* 162				
22	62	60	70	151	122	108	.6	404	396	42	815	180				
23	62	54	70	* 117	108	89	1.1	210	* 384	43	* 494	194				
24	59	72	* 70	100	70	73	* 1.1	150	180	42	387	194				
25	62	74	70	92	* 65	65	.8	117	96	43	342	190				
26	58	* 72	69	92	62	58	1.1	95	73	43	318	186				
27	58	69	69	94	61	52	1.1	80	106	43	299	183				
28	59	69	69	96	59	49	1.1	110	* 501	50	282	180				
29	* 59	69	68	183	67	49	2.7	80	470	107	265	180				
30	66	-----	67	144	93	* 49	2.2	64	187	78	252	171				
31	77	-----	65	-----	127	-----	1.8	54	-----	65	-----	167				
MEAN	58	123	74	98	286	200	13	259	114	52	1086	208				
INCHES	.018	.036	.023	.030	.090	.061	.004	.082	.035	.016	.331	.066				
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .00001017. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 195,000. YEARLY MEAN DISCHARGE, 213 CFS. YEARLY DISCHARGE, .792 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.																

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)							CHICKASHA, OKLAHOMA WATERSHED 200 AT VERDEN AREA — 2,613,000 ACRES (4,083 SQ. MILES)									
YEAR	MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL		
1964	P 1/	.78	2.07	1.16	1.32	5.14	1.30	.91	3.93	4.60	.73	4.70	.62	27.26		
	Q	.019	.038	.024	.027	.096	.059	.004	.071	.034	.016	.293	.065	.746		
STA AV	2/P	.45	.99	1.07	2.05	3.25	4.70	1.71	2.18	4.41	1.46	2.87	.82	25.96		
	Q	.049	.052	.045	.052	.087	.211	.042	.048	.093	.077	.157	.061	.974		
MEAN P 3/ 64 YR		1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23		
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-8	.0019	11-8	.0019	11-8	.0038	11-8	.011	11-8	.022	11-7	.044	11-7	.082	11-5	.158
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 1964	6-12 1962	.0020	6-12 1962	.0020	6-12 1962	.0039	6-12 1962	.012	6-12 1962	.023	6-12 1962	.046	6-11 1962	.088	6-7 1962	.259
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, p. 69.2-1. For maps, see foregoing reference pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 66 gages for the reach between stations at Anadarko and Verden. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1961. 3/ Mean P based on 64-yr (1901-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — Nov. 8, 4,950 cfs (23.72 ft). Minimum — Aug. 2, 1.2 cfs (7.10 ft). PERIOD OF RECORD: Maximum — June 12, 1962, 5,161 cfs(25.36 ft). Minimum — Aug. 2, 1964, 1.2 cfs (7.10 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1964 — Nov. 8, 4,950 cfs (23.72 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
7.23								3.0								
7.46								10								
8.05								40								
8.80								100								
10.0								260								
13.0								950								
17.0								2,150								
23.0								4,600								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA		WATERSHEO 200 AT VERDEN					
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	.00	.00	.00	.00	.00	.00	.52	.00	.00	.00	.00	.00	
2	.00	.00	.00	.00	.00	.02	.13	.00	.00	.00	.00	.00	
3	.00	.22	.00	.13	.00	.00	.00	.00	.00	.00	1.60	.00	
4	.00	1.18	.03	.45	.00	.09	.00	.00	.14	.00	.15	.00	
5	.00	.52	.00	.00	.00	.00	.00	.00	.02	.00	.68	.00	
6	.00	.00	.00	.00	.47	.00	.00	.00	.00	.00	.04	.00	
7	.00	.00	.00	.00	.02	.00	.00	.67	.00	.00	.00	.00	
8	.00	.00	.30	.00	.10	.00	.00	.00	.00	.00	.00	.00	
9	.00	.00	.13	.00	.37	.00	.02	.00	.00	.00	.00	.20	
10	.00	.00	.00	.00	1.78	.00	.00	.02	.00	.00	.00	.33	
11	.00	.00	.00	.00	.00	.83	.00	.00	.41	.07	.00	.00	
12	.00	.01	.00	.00	.00	.01	.00	.00	.00	.25	.00	.00	
13	.00	.00	.00	.00	.00	.24	.00	.00	.00	.03	.00	.00	
14	.00	.07	.00	.00	.00	.00	.00	.63	.00	.00	.00	.00	
15	.00	.00	.00	.00	.11	.04	.00	.97	1.22	.00	.28	.00	
16	.00	.00	.00	.20	.00	.00	.00	.01	.44	.00	.59	.00	
17	.00	.07	.00	.32	.00	.01	.00	.00	.00	.00	.41	.00	
18	.00	.00	.28	.00	.00	.00	.00	1.03	.00	.00	.94	.06	
19	.00	.00	.26	.00	.00	.00	.00	.00	.11	.00	.01	.00	
20	.00	.00	.00	.01	.00	.00	.00	.07	1.35	.00	.00	.00	
21	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	
22	.00	.00	.00	.00	.00	.00	.00	.00	.39	.00	.00	.00	
23	.00	.00	.00	.07	.00	.06	.00	.00	.00	.00	.00	.00	
24	.00	.00	.00	.02	.00	.00	.00	.00	.00	.07	.00	.00	
25	.00	.00	.00	.11	.00	.00	.01	.00	.00	.31	.00	.00	
26	.00	.00	.00	.01	.00	.00	.00	.13	.34	.00	.00	.00	
27	.00	.00	.00	.00	.00	.00	.00	.17	.18	.00	.00	.00	
28	.00	.00	.00	.00	.00	.00	.04	.18	.00	.00	.00	.00	
29	.07	.00	.00	.00	1.56	.00	.16	.00	.00	.00	.00	.00	
30	.64	.00	.16	.00	.73	.00	.00	.00	.00	.00	.00	.00	
31	.07	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.03	
TOTAL	.78	2.07	1.16	1.32	5.14	1.30	.91	3.93	4.60	.73	4.70	.62	
STAAV	.45	.99	1.07	2.05	3.25	4.70	1.71	2.18	4.41	1.46	2.87	.82	
NOTES: YEARLY PRECIPITATION 27.26 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 66 GAGES ON THE REACH BETWEEN STATIONS 100 AND 200.													

1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA		WATERSHEO 200 AT VERDEN					
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	
1	72	87	90	78	104	339	56	1.4	63	156	65	231	
2	72	86	90	79	85	* 625	56	1.2	58	104	59	280	
3	73	82	88	76	75	372	46	38	* 52	86	* 70	270	
4	71	97	88	82	67	257	40	* 81	46	71	108	260	
5	69	165	89	100	* 64	210	34	40	42	61	* 963	254	
6	68	193	88	100	68	200	30	46	34	58	* 3150	249	
7	68	274	86	* 90	62	157	26	* 95	30	52	* 4220	246	
8	68	422	85	87	73	128	23	56	29	48	* 4750	* 242	
9	68	390	98	83	* 510	115	21	49	27	46	* 2070	235	
10	66	232	93	79	385	111	* 17	* 43	* 27	50	* 938	245	
11	65	* 180	* 92	75	* 645	127	16	39	28	48	671	246	
12	61	160	90	72	* 1600	133	16	37	31	50	* 519	249	
13	57	145	85	70	2190	121	16	* 30	30	54	423	246	
14	* 53	137	82	69	1100	122	14	23	28	54	364	244	
15	55	130	81	67	687	* 122	12	45	33	48	322	238	
16	60	125	80	66	466	277	9.0	30	* 49	48	296	235	
17	54	121	77	73	313	* 501	8.4	18	50	47	318	226	
18	52	119	77	96	275	701	6.7	41	45	45	* 915	215	
19	60	114	85	81	244	588	5.6	* 793	47	42	* 2090	209	
20	70	110	94	145	226	334	* 4.4	* 2440	64	* 41	* 2670	206	
21	78	105	93	258	180	204	3.7	* 1860	* 253	40	* 2430	* 194	
22	80	104	89	178	157	144	3.3	* 665	280	40	* 1280	189	
23	78	75	86	* 135	148	119	2.9	325	* 501	39	755	217	
24	76	85	* 84	108	116	97	* 2.9	207	278	39	533	224	
25	73	95	83	95	86	81	2.8	148	157	37	439	219	
26	73	* 94	83	89	* 80	71	2.8	123	101	39	396	217	
27	72	93	81	79	77	61	2.8	103	123	41	* 376	211	
28	71	92	80	77	74	56	2.8	112	143	42	348	205	
29	* 69	91	78	91	82	54	2.4	129	* 691	64	321	200	
30	74	-----	78	144	151	* 52	3.0	88	339	95	301	195	
31	86	-----	* 77	-----	168	-----	2.2	74	-----	76	-----	190	
MEAN	68	145	86	97	341	216	16	251	123	57	1072	231	
INCHES	.019	.038	.024	.027	.096	.059	.004	.071	.034	.016	.293	.065	
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/OAY, MULTIPLY BY .000009109. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 217,700. YEARLY MEAN DISCHARGE, 224 CFS. YEARLY DISCHARGE, .746 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.													

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 400 NEAR CHICKASHA AREA — 2,726,000 ACRES (4,259 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.78 .018	2.00 .036	1.44 .022	1.55 .027	4.78 .092	.72 .056	.84 .004	3.98 .060	3.69 .030	.66 .016	5.11 .270	.72 .063	26.27 .694			
STA AV 2/P Q	.46 .053	1.07 .053	1.33 .047	2.28 .053	2.99 .086	3.72 .216	1.59 .041	2.21 .042	3.10 .083	1.26 .071	3.26 .149	.93 .060	24.20 .954			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-8	.0016	11-8	.0016	11-8	.0032	11-8	.010	11-8	.019	11-8	.037	11-7	.070	11-5	.138
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 19 64	6-2 1962	.0022	6-2 1962	.0022	6-2 1962	.0044	6-2 1962	.013	6-2 1962	.025	6-13 1962	.043	6-13 1962	.080	6-8 1962	.245
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p.69.4-1. For maps, see foregoing reference pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 33 gages on the watershed reach between stations at Verden and Chickasha. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1961. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — Nov. 8, 4,480 cfs (22.70 ft). Minimum — Aug. 1, no flow (6.45 ft). PERIOD OF RECORD: Maximum — June 2, 1962, 5,998 cfs (26.20 ft). Minimum — Aug. 1, 1964, no flow (6.45 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1964 — Nov. 8, 4,480 cfs (22.70 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft; discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
6.45								0								
7.40								10								
8.10								40								
9.00								120								
11.00								400								
13.50								1,000								
17.00								2,100								
22.00								4,000								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 400 NEAR CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.36	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.11	.00	.00	.00	.00	.00
3	.00	.11	.00	.58	.00	.00	.00	.00	.00	.00	1.70	.00
4	.00	1.13	.03	.50	.00	.07	.00	.00	.04	.00	.03	.00
5	.00	.61	.00	.00	.00	.00	.00	.00	.00	.00	.61	.00
6	.00	.00	.00	.00	.39	.00	.00	.00	.00	.00	.01	.00
7	.00	.00	.00	.00	.04	.00	.00	.81	.00	.00	.00	.00
8	.00	.00	.61	.00	.17	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.07	.00	.31	.00	.01	.00	.00	.00	.00	.22
10	.00	.00	.00	.00	1.41	.00	.00	.00	.00	.00	.00	.39
11	.00	.00	.00	.00	.00	.16	.00	.01	.20	.10	.00	.00
12	.00	.02	.00	.00	.00	.00	.02	.00	.00	.40	.00	.00
13	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00	.00	.00
14	.00	.01	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00
15	.00	.00	.00	.00	.04	.12	.00	1.69	1.15	.00	.19	.00
16	.00	.00	.00	.00	.00	.01	.00	.00	.66	.00	.74	.00
17	.00	.12	.00	.12	.00	.00	.00	.00	.01	.00	.50	.00
18	.00	.00	.26	.00	.00	.00	.00	.52	.00	.00	1.31	.06
19	.00	.00	.34	.00	.00	.00	.00	.00	.01	.00	.02	.00
20	.00	.00	.00	.00	.00	.00	.00	.01	.66	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.48	.02	.00	.00
23	.00	.00	.00	.28	.00	.16	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.02	.00	.00	.00	.00	.00	.14	.00	.00
26	.00	.00	.00	.05	.00	.00	.00	.37	.33	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.02	.15	.00	.00	.00
28	.00	.00	.00	.00	.02	.00	.18	.25	.00	.00	.00	.00
29	.12	.00	.00	.00	1.87	.00	.15	.00	.00	.00	.00	.00
30	.61	-----	.13	.00	.53	.00	.00	.00	.00	.00	.00	.00
31	.05	-----	.00	-----	.00	-----	.01	.00	-----	.00	-----	.05
TOTAL	.78	2.00	1.44	1.55	4.78	.72	.84	3.98	3.69	.66	5.11	.72
ST. AVE.	.46	1.07	1.33	2.28	2.99	3.72	1.59	2.21	3.10	1.26	3.26	.93

NOTES: YEARLY PRECIPITATION 26.27 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 33 GAGES ON THE REACH BETWEEN STATIONS 200 AND 400.

1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 400 NEAR CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	73	87	<u>95</u>	78	119	174	59	.0	70	<u>239</u>	68	<u>239</u>
2	72	88	95	77	86	549	<u>63</u>	.0	62	142	59	285
3	73	84	92	78	68	470	59	.0	56	100	77	270
4	66	89	88	<u>379</u>	56	300	50	33	* 51	85	148	262
5	63	130	86	134	48	235	46	* 59	47	68	* 291	253
6	62	186	88	117	51	210	40	25	41	61	*2320	251
7	60	179	85	108	50	186	35	* 57	36	57	*3470	243
8	63	374	80	89	<u>43</u>	155	29	69	33	50	*4170	*242
9	61	<u>428</u>	86	* 84	* 233	127	20	41	31	45	*3070	237
10	60	269	93	78	407	* 120	16	* 40	24	43	*1060	240
11	58	192	* 91	71	* 746	123	11	37	<u>20</u>	45	694	249
12	53	* 165	85	66	925	140	11	28	26	47	* 539	250
13	<u>44</u>	147	81	60	<u>2270</u>	131	15	* 25	26	58	424	248
14	55	137	77	57	*1360	126	13	16	28	50	363	237
15	53	132	74	54	790	123	9.8	69	33	46	322	236
16	* 56	127	74	51	547	119	6.3	50	43	44	311	235
17	64	126	<u>73</u>	<u>50</u>	384	* 440	2.8	27	* 54	44	442	228
18	63	123	73	76	295	436	6.2	21	48	44	616	219
19	76	117	79	83	260	<u>727</u>	4.5	146	44	43	*1990	255
20	62	113	85	70	237	397	* 3.2	*1750	50	42	*2480	239
21	<u>79</u>	109	89	* 209	208	260	1.0	<u>2020</u>	84	42	*2640	197
22	78	107	89	198	170	167	.6	* 903	301	* <u>40</u>	*1630	187
23	78	106	85	153	157	137	.8	384	369	40	891	*194
24	75	<u>74</u>	83	128	148	120	* .3	255	390	40	626	213
25	70	98	* 81	102	112	100	.2	175	216	40	487	212
26	69	99	80	92	89	87	.2	135	140	40	421	206
27	68	97	80	75	78	78	.2	110	125	42	* 383	201
28	65	* 96	80	63	* 71	71	.2	97	131	42	352	197
29	64	95	78	56	92	62	.2	116	* 423	42	331	197
30	68	-----	75	101	226	<u>60</u>	.1	98	<u>473</u>	73	308	193
31	* 76	-----	76	-----	196	-----	.1	81	-----	86	-----	<u>185</u>
MEAN	65	144	83	101	339	214	16	222	116	61	1033	231
INCHES	.018	.036	.022	.027	.092	.056	.004	.060	.030	.016	.270	.063

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000008731. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 227,200. YEARLY MEAN DISCHARGE, 218 CFS. YEARLY DISCHARGE, .694 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

CHICKASHA, OKLAHOMA WATERSHED 500 NEAR CHICKASHA

LOCATION: WATERSHED — Washita River Watershed above Chickasha, Okla.; Southwest Central Oklahoma and Texas Panhandle; in Grady, Caddo, Canadian, Kiowa, Washita, Custer, Beckham, and Roger Mills Counties, Okla.; and Hemphill, Wheeler, and Gray Counties, Tex.; Washita River, Red River Basin.

GAGING STATION — SE $\frac{1}{4}$ sec. 23, T. 7 N., R. 7 W., lat. 35°05', long. 97°54', 1 mile northeast of Chickasha, Okla., at H. E. Bailey Turnpike bridge over Washita River; at river mile 256.5, approximately 1.3 miles downstream from confluence of Line Creek.

AREA: 2,770,000 acres (4,328 sq. miles). Local drainage area for reach between Chickasha (4th St.) and Chickasha (Turnpike) gaging stations: 43,840 acres (68.5 sq. miles). See composite map in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.7-7.

SLOPES:	Slope — Percent	0-1	1-3	3-5	5-8	8-12	12 and above	
	Percent of area	35	10	30	21	3	1	1/

SOILS: Residual, derived from siltstone, shale, alluvial terraces and flood plain materials: 1/

Soil	Per cent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Avg. depth (in.)	Structure	Permeability	Structure	Permeability	Avg. depth to (in.)	Permeability	
Reinach-McLain Port-Yahola silt loams	47	20	Moderate fine granular	Moderate	Moderate medium granular	Moderate	45	Moderate	Medium
Vanoss Chickasha Kingfisher silt loams	45	16	Moderate fine granular	Moderate	Moderate fine subangular blocky	Moderate	36	Moderate	Medium
Grant-Nash-Quinlan silt loams	5	10	Moderate medium granular	Moderate	Moderate medium granular	Moderate	28	Moderate	Medium
Kirkland-Renfrow silt loams	3	14	Moderate fine granular	Moderate	Strong medium blocky	Very slow	38	Moderately slow	Very slow

EROSION:	Erosion	1	2	3	4	
	Percent of area	35	50	14	1	1/

LAND CAPABILITY:	Class	I	II	III	IV	V	VI	VII	
	Percent of area	15	15	52	12	3	3	0	1/

1/ Information presented for general descriptive purposes and is not intended to be precise data.

GEOLOGY: The geologic formations in area tributary to reach, in percent are: Recent flood plain alluvium deposits, 28.7; Cloud Chief formation, 0.0; Rush Springs formation, 13.0; Marlow, Dog Creek, and Blaine formations, 47.1; and Chickasha formation, 11.2. See description of hydrogeology and general geology map in reference listed under the AREA section above, pages 69.7-8 and 9.

SURFACE DRAINAGE: Good, length of principal waterway 370 miles; length of reach between Chickasha (4th St.) and Chickasha (Turnpike) gaging stations 5.7 miles.

CHARACTER OF FLOW: Perennial, continuous.

INSTRUMENTATION: Precipitation: Above Anadarko, Weather Bureau substations exist, but no data are presented. Between Anadarko and Chickasha (4th St.), see description for watersheds 200 and 400 in reference listed under the AREA section above, pp. 69.2-1 and 69.4-1. Between Chickasha (4th St.) and Chickasha (Turnpike), 1 Weather Bureau substation plus recording weighing type gages installed on 3-mile square grid. Grid pattern oriented in north northeast direction and consists of approximately 17 gages, all in operation. Time scales vary but are primarily 24-hr. Runoff: Tape down from reference point on upstream side of bridge, datum 1,050.00 ft.; all datum m.s.l. elev. by 1929 adjustment. Stevens A-35 water-level recorder and bubble gage servo-manometer on left bank with a 4.8 inch per day time scale. Sandy but stable channel control. Low flow current meter measurements made by wading channel. High flow current meter measurements made by crane from upstream side of bridge. Measurements made periodically and during each major event.

WATERSHED CONDITIONS: Most of the class I and II land is farmed with a rotation of small grains, alfalfa, and cotton. Those farming class III land interspersed with a few small areas of class IV land grow small grains and sorghums. Farmers in the area use moldboard plows which bury crop residue. Weeds are controlled by surface tillage with spring-tooth or spike-tooth harrows prior to the planting of the following crops. Fertilization is based on soil test recommendations. Approximately 30% of the cultivated area is flat enough that no structural conservation measures are applied. About 95% of the remaining land in cultivation has been treated with waterways, terraces, and contour farming. There are approximately 4 farm ponds per sq. mile in the area. The following table shows the land use:

Percent of watershed in											
Cultivation - 76						Pasture or range - 18		Wooded pasture - 2		Miscellaneous - 4	
Percent of cultivated land in						Classification of range site condition based on production		Classification of range site condition based on production		Farmsteads, roads, airports, etc.	
Alfalfa - 10		Sowed crops - 62		Row crops - 28							
Average yield ton/ac	Wheat yield bu/ac	Oats yield bu/ac	Barley yield bu/ac	Milo yield bu/ac	Cotton yield-lint lb/ac	Exc. - 3%	Good - 16%	Fair - 50%	Poor - 50%		
						Fair - 32%	Poor - 49%				
4	30	38	42	32	290	The general practice for good range utilization is 1 animal unit per 10 acres					

GENERALLY REPRESENTS: Large rivers of the Central Great Plains Winter Wheat and Range Region, specifically the Central Rolling Red Plains and Central Rolling Red Prairies, land resource areas (H-78 and H-80), with general application to the Cross Timbers land resource area (J-84) of the Southwestern Prairies Cotton and Forage Region.

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 500 NEAR CHICKASHA										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.95 .017	2.30 .036	1.22 .022	.90 .027	5.74 .091	1.48 .054	.62 .004	4.02 .060	4.58 .031	.66 .017	6.28 .274	.75 .059	29.50 .692			
STA AV 2/P Q	.50	1.20	1.30	1.82	3.41	3.98	1.99	1.99	3.78	1.26	3.54	1.98	25.75			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-8	.0016	11-8	.0016	11-8	.0032	11-8	.009	11-8	.019	11-8	.037	11-7	.070	11-5	.139
MAXIMUMS FOR PERIOD OF RECORD 4/																
1964 TO 1964	11-8 1964	.0016	11-8 1964	.0016	11-8 1964	.0032	11-8 1964	.009	11-8 1964	.019	11-8 1964	.037	11-7 1964	.070	11-5 1964	.139
Notes: Watershed conditions same as that described on previous page under WATERSHED CONDITIONS. For maps see pp. 69.7-7 and 9 in the AREA section on previous page. 1/ Precipitation data obtained from a Thiessen weighted average of 17 gages for the reach between stations at Chickasha (4th St.) and Chickasha (Turnpike). 2/ Precipitation records began Oct. 1961; runoff records began Jan. 1964. 3/ Mean P based on 64-yr (1901-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Jan. 1964.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — Nov. 8, 4,420 cfs (18.82 ft). Minimum — Aug. 1, no flow (4.00 ft). PERIOD OF RECORD: Maximum — Nov. 8, 1964, 4,420 cfs (18.82 ft). Minimum — Aug. 1, 1964, no flow (4.00 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1964 — Nov. 8, 4,420 cfs (18.82 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
4.45								10								
5.50								80								
6.50								220								
9.00								700								
12.00								1,600								
18.00								4,000								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 500 NEAR CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.23	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.01	.19	.00	.00	.00	.00	.00
3	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00	1.79	.00
4	.00	1.22	.01	.53	.00	.09	.00	.00	.15	.00	.09	.00
5	.00	.73	.00	.00	.00	.00	.00	.00	.00	.00	.69	.00
6	.00	.00	.00	.00	.83	.00	.00	.00	.00	.00	.02	.00
7	.00	.00	.00	.00	.06	.00	.00	.77	.00	.00	.00	.00
8	.00	.00	.43	.00	.21	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.10	.00	1.04	.00	.01	.00	.00	.00	.00	.26
10	.00	.00	.00	.00	1.11	.00	.00	.00	.01	.00	.00	.36
11	.00	.00	.00	.00	.00	.08	.00	.01	.09	.18	.00	.00
12	.00	.02	.00	.00	.00	.00	.00	.00	.00	.40	.00	.00
13	.00	.00	.00	.00	.00	.47	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00
15	.00	.00	.00	.00	.04	.44	.00	1.80	1.03	.00	.06	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00	1.55	.00
17	.00	.12	.00	.01	.00	.01	.00	.00	.01	.00	.71	.00
18	.00	.00	.26	.00	.00	.00	.00	.71	.00	.00	1.34	.07
19	.00	.00	.25	.00	.00	.00	.00	.00	.00	.00	.03	.00
20	.00	.00	.00	.03	.00	.00	.00	.00	1.10	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.58	.00	.00	.00
23	.00	.00	.00	.19	.00	.38	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.08	.00	.00	.00	.00	.00	.08	.00	.00
26	.00	.00	.00	.06	.00	.00	.00	.06	.78	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.03	.22	.00	.00	.00
28	.00	.00	.00	.00	.02	.00	.07	.44	.00	.00	.00	.00
29	.22	.00	.00	.00	1.71	.00	.12	.00	.00	.00	.00	.00
30	.67	-----	.17	.00	.72	.00	.00	.00	.00	.00	.00	.00
31	.06	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.06
TOTAL	.95	2.30	1.22	.90	5.74	1.48	.62	4.02	4.58	.66	6.28	.75
STAAV	.50	1.20	1.30	1.82	3.41	3.98	1.99	1.99	3.78	1.26	3.54	.98
NOTES: RECORDS BEGAN OCT 1, 1961. YEARLY PRECIPITATION 29.50 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 17 GAGES ON THE REACH BETWEEN STATIONS 400 AND 500.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 500 NEAR CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	63	82	90	80	128	149	63	.0	72	264	80	228
2	62	82	89	79	103	470	62	.0	62	156	69	273
3	63	81	89	79	63	470	61	.0	56	113	101	255
4	56	100	89	345	55	291	52	3.4	48	90	193	245
5	53	125	90	180	50	213	46	* 62	44	72	229	240
6	52	190	90	118	50	187	39	27	39	65	*2240	240
7	50	210	90	100	50	172	30	43	34	61	*3540	235
8	53	340	90	* 83	40	143	* 22	73	28	53	*4230	235
9	61	500	90	80	235	123	15	43	26	48	*3300	230
10	63	365	96	74	507	115	11	* 40	20	46	*1140	240
11	60	192	92	69	796	* 112	10	32	14	48	740	*237
12	50	155	94	66	920	126	6.2	27	20	54	* 577	240
13	49	140	* 85	62	2265	129	10	19	18	62	466	240
14	59	* 120	81	60	1356	124	9.3	15	21	66	393	233
15	59	112	78	56	790	157	8.0	93	32	60	345	233
16	55	112	73	55	542	137	5.5	53	52	47	342	230
17	* 58	111	70	54	379	* 392	1.8	* 31	* 56	47	626	219
18	52	111	68	63	291	442	1.0	46	54	45	636	198
19	73	110	68	126	254	* 743	.8	74	47	42	*2080	218
20	82	107	73	108	232	423	.6	*1660	76	* 42	*2450	220
21	81	106	79	175	202	275	.4	*2150	82	42	*2620	196
22	76	104	83	206	165	172	.4	* 984	* 302	42	1680	*184
23	72	102	83	* 157	153	136	.3	448	353	41	* 877	185
24	71	100	* 81	118	144	119	.3	261	433	41	630	205
25	71	99	80	113	106	102	.2	179	237	41	501	205
26	70	97	79	102	72	88	.2	139	156	41	430	203
27	69	97	79	82	66	83	.2	114	187	43	389	200
28	68	* 96	79	68	* 61	78	.2	103	140	44	357	196
29	67	96	79	58	91	66	.2	109	363	45	332	191
30	72	-----	79	85	206	62	.2	108	516	67	307	184
31	* 78	-----	80	-----	188	-----	.4	84	-----	105	-----	181
MEAN	64	146	83	103	341	210	15	226	120	66	1063	222
INCHES	.017	.036	.022	.027	.091	.054	.004	.060	.031	.017	.274	.059
NOTES: RECORDS BEGAN JAN 1, 1964. TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .00008593. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 230.800. YEARLY MEAN DISCHARGE, 220 CFS. YEARLY DISCHARGE, .692 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 600 NEAR TABLER AREA — 3,012,000 ACRES (4,707 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	1.12 .021	2.17 .034	1.12 .025	1.16 .025	7.09 .124	1.24 .056	.81 .005	3.94 .060	4.24 .032	.86 .020	6.11 .287	.75 .061	30.61 .750			
STA AV 2/P Q	.58	1.20	1.37	2.13	3.70	3.79	2.07	2.00 .034	3.83 .036	1.50 .016	3.52 .152	.94 .040	26.63			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0018	5-10	.0018	5-10	.0036	5-10	.010	11-9	.017	11-8	.033	11-7	.063	11-6	.128
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 19 64	5-10 1964	.0018	5-10 1964	.0018	5-10 1964	.0036	5-10 1964	.010	11-9 1964	.017	11-8 1964	.033	11-7 1964	.063	11-6 1964	.128
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1963, USDA, Misc. Pub. 1164, p. 69.6-1. For maps see Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. 1/ Precipitation data based on a Thiessen weighted average of 66 gages for the reach between stations at Chickasha (Turnpike) and Tabler. 2/ Precipitation records began Oct. 1961; runoff records began Aug. 1963. 3/ Mean P based on 64-yr (1961-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Aug. 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 5,520 cfs (E stage unknown). Minimum — Aug. 1, no flow (9.80 ft). PERIOD OF RECORD: Maximum — May 10, 1964, 5,520 cfs (E stage unknown). Minimum — Aug. 1, 1964, no flow (9.80 ft). PEAK DISCHARGES: (Above base of 3,000 cfs) 1963 — May 10, 5,520 cfs (E stage unknown); May 10, 3,900 cfs (E stage unknown); Nov. 9, 4,410 cfs (20.87 ft); Nov. 17, 3,170 cfs (18.87 ft); Nov. 19, 3,220 cfs (19.05 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
10.29								10								
10.85								60								
11.47								150								
13.00								500								
14.55								1,000								
16.85								2,000								
18.70								3,000								
20.35								4,000								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 600 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.01	.00	.18	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.01	.20	.00	.00	.00	.00	.00
3	.00	.29	.00	.03	.00	.00	.00	.00	.00	.00	1.75	.00
4	.00	1.12	.03	.56	.00	.11	.00	.00	.14	.00	.13	.00
5	.00	.64	.00	.00	.00	.00	.00	.00	.00	.00	.69	.00
6	.00	.00	.00	.00	1.22	.00	.00	.00	.00	.00	.05	.00
7	.00	.00	.00	.00	.33	.00	.00	1.01	.00	.00	.00	.00
8	.00	.00	.50	.00	.14	.00	.01	.00	.00	.00	.00	.00
9	.00	.00	.08	.00	1.66	.00	.00	.00	.00	.00	.00	.28
10	.00	.00	.00	.00	.94	.00	.00	.00	.00	.00	.00	.36
11	.00	.00	.00	.00	.00	.18	.00	.02	.05	.18	.00	.00
12	.00	.02	.00	.00	.00	.06	.01	.00	.00	.57	.00	.00
13	.00	.00	.00	.00	.00	.45	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00
15	.00	.00	.00	.00	.03	.16	.00	1.08	.92	.00	.13	.00
16	.00	.00	.00	.00	.00	.01	.00	.18	.63	.00	1.39	.00
17	.00	.10	.00	.02	.00	.02	.00	.00	.02	.00	.79	.00
18	.00	.00	.22	.00	.00	.00	.00	1.10	.00	.00	1.14	.06
19	.00	.00	.16	.00	.00	.00	.00	.00	.00	.00	.04	.00
20	.00	.00	.00	.04	.00	.00	.00	.00	1.06	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.03	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.70	.00	.00	.00
23	.00	.00	.00	.28	.00	.24	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.11	.00	.00	.02	.00	.00	.11	.00	.00
26	.00	.00	.00	.12	.00	.00	.01	.16	.41	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.29	.00	.00	.00
28	.00	.00	.00	.00	.02	.00	.12	.23	.01	.00	.00	.00
29	.30	.00	.00	.00	1.69	.00	.17	.00	.00	.00	.00	.00
30	.78	-----	.13	.00	1.04	.00	.00	.00	.00	.00	.00	.00
31	.04	-----	.00	-----	.01	-----	.09	.00	-----	.00	-----	.05
TOTAL	1.12	2.17	1.12	1.16	7.09	1.24	.81	3.94	4.24	.86	6.11	.75
STAAV	.58	1.20	1.37	2.13	3.70	3.79	2.07	2.00	3.83	1.50	3.52	.94
NOTES: YEARLY PRECIPITATION 30.61 INCHES. ON JAN 1, 1964, STATION 500 ESTABLISHED. PRECIPITATION VALUES FOR PERIOD JAN 1, 1964 TO DEC 31, 1964 ARE A THIESSEN WEIGHTED AVERAGE OF 66 GAGES ON THE REACH BETWEEN STATIONS 500 AND 600.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 600 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	85	119	101	99	100	228	69	.0	85	401	88	348
2	* 85	116	100	98	93	228	73	.0	74	212	73	327
3	89	118	101	96	* 65	552	81	.0	63	136	82	305
4	89	154	99	198	47	366	66	.0	* 52	106	* 597	290
5	87	249	101	282	40	299	54	.0	48	91	288	277
6	86	224	97	155	* 244	244	45	* 36	43	75	* 1500	271
7	85	218	96	112	124	223	37	* 107	40	66	* 3150	264
8	83	230	97	104	188	184	27	98	34	* 58	* 3890	* 258
9	82	249	118	* 93	235	* 153	* 24	77	29	54	* 3990	257
10	82	198	128	82	3430	139	19	45	25	50	* 1600	280
11	83	209	123	76	1830	132	15	38	* 20	47	914	279
12	55	* 188	* 113	72	834	167	12	31	13	61	* 672	267
13	47	166	106	71	* 1990	174	12	25	17	* 217	520	260
14	71	150	100	62	1690	189	12	* 16	18	110	417	260
15	* 85	141	93	54	* 747	146	9.0	* 233	25	74	349	258
16	80	132	91	53	561	* 210	7.5	175	65	67	322	250
17	89	129	91	53	494	223	7.1	66	* 77	59	1810	234
18	88	130	92	53	377	* 484	4.0	197	64	56	1030	221
19	92	126	105	74	310	* 658	1.8	108	52	50	* 2720	227
20	94	120	113	80	269	580	* 1.6	* 840	* 468	46	* 2620	234
21	83	116	109	86	238	368	1.3	* 2110	* 139	* 46	* 2770	239
22	91	113	110	* 214	202	262	1.0	* 1330	192	46	2130	* 217
23	89	110	110	184	180	* 213	1.0	599	* 302	45	* 1130	203
24	86	106	* 104	169	168	144	* .9	* 358	* 471	44	775	226
25	82	81	100	127	150	119	.8	231	263	44	624	229
26	80	99	100	103	115	94	.7	177	163	44	537	228
27	80	* 101	98	91	* 95	80	.6	143	253	44	490	223
28	80	100	98	71	86	72	.4	135	142	44	435	221
29	80	101	96	62	113	65	.8	123	159	44	395	214
30	96	-----	94	56	359	* 55	.5	133	* 614	44	365	208
31	* 129	-----	98	-----	290	-----	.8	105	-----	82	-----	207
MEAN	84	148	103	104	505	235	19	243	134	83	1209	251
INCHES	.021	.034	.025	.025	.124	.056	.005	.060	.032	.020	.287	.061
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000007902. TO CONVERT DISCHARGE IN INCHES TO AC/FT, MULTIPLY BY 251,100. YEARLY MEAN DISCHARGE, 259 CFS. YEARLY DISCHARGE .750 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 700 AT ALEX AREA — 3,064,000 ACRES (4,787 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	1.09 .021	2.18 .038	1.35 .025	1.05 .028	8.04 .142	1.24 .063	.79 .005	4.24 .061	4.74 .032	1.31 .021	6.16 .294	.70 .060	32.89 .790			
STA AV 2/P Q	.61 .058	1.18 .058	1.41 .055	2.29 .064	4.02 .106	4.17 .229	1.85 .047	2.08 .043	3.50 .090	1.68 .074	3.50 .162	1.00 .067	27.29 1.053			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0018	5-10	.0018	5-10	.0035	5-10	.010	5-10	.017	11-8	.032	11-7	.061	11-7	.128
MAXIMUMS FOR PERIOD OF RECORD 4/																
1961 TO 1964	9-20 1962	.0032	9-20 1962	.0032	9-20 1962	.0063	9-20 1962	.019	9-20 1962	.035	9-20 1962	.057	9-20 1962	.097	6-8 1962	.240
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc.Pub.1070, p 69.7-1. For maps, see foregoing reference pp. 69.7-7 and 9. 1/ Precipitation data based on a Thiessen weighted average of 21 gages on the reach from Tabler to Alex. 2/ Precipitation records began Oct. 1961. Runoff records began Oct. 1961. 3/ Mean P based on 64-yr (1901-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 5,550 cfs (12.65 ft). Minimum — July 28, no flow (2.80 ft). PERIOD OF RECORD: Maximum — Sept. 20, 1962, 9,750 cfs (16.18 ft). Minimum — July 28, 1964, no flow (2.80 ft). PEAK DISCHARGES: (above base of 3,000 cfs) 1964 — May 10, 5,550 cfs (12.65 ft); May 10, 4,500 cfs (11.82 ft); Nov. 9, 4,300 cfs (12.06 ft); Nov. 17, 3,370 cfs (10.75 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
3.40								10								
3.97								60								
5.25								200								
5.84								500								
7.00								1,000								
8.90								2,000								
10.30								3,000								
11.60								4,000								

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

CLIMATOLOGICAL DATA APPLICABLE TO ENTIRE EXPERIMENTAL WATERSHED
(ANADARKO TO ALEX)

1964 DAILY AIR TEMPERATURE (degrees F)											CHICKASHA, OKLAHOMA						CHICKASHA EXPERIMENT STATION									
DAY	JAN		FEB		MAR		APR		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC			
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN		
1	51	20	60	27	74	38	79	52	81	51	80	47	95	73	94	75	93	73	75	53	80	57	56	35		
2	71	31	63	37	76	47	86	59	86	51	75	55	95	70	96	77	93	72	76	53	79	60	55	38		
3	67	45	61	38	76	40	83	57	95	64	83	55	98	67	98	78	97	73	81	46	75	56	53	25		
4	55	18	55	32	69	31	68	47	94	67	84	64	100	64	104	72	93	73	77	53	69	56	30	22		
5	47	19	44	34	67	18	73	42	86	68	79	59	101	70	107	73	93	70	68	38	60	55	38	17		
6	53	25	44	32	77	47	82	46	83	63	89	53	101	74	107	77	92	69	72	38	65	49	47	19		
7	60	30	42	22	74	36	78	41	82	70	97	70	103	75	104	70	91	69	77	48	60	47	55	18		
8	52	34	56	25	47	33	56	30	78	66	95	71	103	77	93	74	93	70	72	47	73	40	60	20		
9	47	28	58	25	42	27	69	29	81	57	97	74	101	72	96	67	95	71	67	38	76	53	55	25		
10	54	21	54	29	64	34	78	37	79	59	94	73	99	76	100	77	99	71	70	38	74	58	53	43		
11	49	25	52	25	64	36	85	54	75	54	91	67	99	79	96	74	95	61	71	52	77	58	54	28		
12	37	13	54	42	69	30	93	51	74	56	89	70	94	68	85	64	80	61	70	64	74	41	54	37		
13	31	5	50	30	81	49	72	36	78	45	86	68	90	59	90	67	77	55	70	45	78	38	50	29		
14	43	4	56	23	64	43	80	39	83	46	92	72	98	61	98	67	87	54	70	44	77	55	56	22		
15	47	9	50	34	68	25	85	47	81	62	92	70	97	75	97	66	84	54	75	41	76	70	57	26		
16	52	9	53	16	67	24	84	54	87	60	89	67	97	70	81	65	72	61	81	54	71	45	61	39		
17	58	25	51	28	71	25	88	62	88	58	91	70	92	74	87	65	75	63	89	60	49	42	43	12		
18	74	18	53	30	70	37	87	66	85	56	94	74	95	70	87	69	88	59	79	56	49	43	28	7		
19	65	39	50	27	65	47	83	67	88	62	95	70	95	71	90	69	88	69	66	36	46	33	39	21		
20	68	15	48	31	64	31	82	67	89	60	97	75	96	71	92	70	82	59	71	31	69	28	51	22		
21	71	37	42	18	51	24	86	65	90	60	97	75	95	75	92	68	77	64	80	38	43	21	46	27		
22	71	41	53	15	67	29	85	60	82	62	99	75	99	73	89	65	74	66	84	40	50	23	65	26		
23	70	30	52	25	71	30	92	61	90	66	95	64	100	71	91	57	79	63	78	41	56	30	69	29		
24	62	34	57	18	71	41	85	61	92	70	89	58	103	73	90	68	77	54	75	48	50	27	63	30		
25	61	15	58	30	42	27	89	62	95	68	90	60	101	71	92	69	75	54	70	53	64	27	60	32		
26	67	23	43	16	54	16	85	62	94	69	91	61	104	69	91	73	73	55	73	52	55	35	46	25		
27	61	23	48	13	71	33	81	54	90	69	92	62	103	75	90	68	79	50	73	59	61	27	49	21		
28	59	18	54	23	67	33	77	54	80	55	95	61	101	75	88	66	72	44	75	50	60	27	65	40		
29	58	28	58	23	65	26	75	38	70	57	95	66	95	72	91	67	76	54	80	46	60	32	68	47		
30	45	41	---	---	67	26	78	46	72	56	98	70	97	72	90	69	75	52	81	53	39	18	62	35		
31	54	38	---	---	81	30	---	---	70	51	---	---	92	72	90	72	---	---	79	56	---	---	54	43		
AV.	57	24	52	26	66	33	81	52	84	60	91	66	98	71	93	70	84	62	75	48	64	42	53	28		
MEAN	40.6	39.4	49.5	66.2	71.8	78.4	84.7	81.5	73.1	61.2	52.8	40.4	40.6	39.4	49.5	66.2	71.8	78.4	84.7	81.5	73.1	61.2	52.8	40.4		
STA AV	50	25	56	30	64	36	76	49	82	59	90	67	94	71	94	69	87	61	76	50	63	37	53	29		

NOTES: TEMPERATURE DATA ARE BASED ON CHICKASHA EXPERIMENT STATION RECORDS PUBLISHED IN U. S. WEATHER BUREAU CLIMATOLOGICAL DATA FOR OKLAHOMA, VOL. 73. STATION AVERAGE BASED ON RECORDS FROM JUNE 1953 THROUGH DEC. 1964.

1964 MONTHLY EVAPORATION AND WIND

MONTH	EVAPORATION (INCHES)	TOTAL WIND (MILES)
APRIL	---	487
MAY	10.80	375
JUNE	11.55	---
JULY	14.24	---
AUGUST	10.80	2203
SEPTEMBER	7.28	1632
OCTOBER	5.80	1611
NOVEMBER	---	2685

EVAPORATION DATA ARE BASED ON CHICKASHA EXPERIMENT STATION RECORDS PUBLISHED IN U. S. WEATHER BUREAU CLIMATOLOGICAL DATA FOR OKLAHOMA, VOL. 73.

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA			WATERSHED 700 AT ALEX			
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.15	.00	.07	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.01	.03	.00	.00	.00	.00	.00
3	.00	.26	.00	.00	.00	.00	.00	.00	.00	.00	1.55	.00
4	.00	1.13	.04	.53	.00	.38	.00	.00	.29	.00	.07	.00
5	.00	.67	.00	.00	.00	.00	.00	.00	.00	.00	.59	.00
6	.00	.00	.00	.00	1.64	.00	.00	.00	.00	.00	.04	.00
7	.00	.00	.00	.00	.35	.00	.00	1.25	.00	.00	.00	.00
8	.00	.00	.75	.00	.07	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.08	.00	1.65	.00	.00	.00	.00	.00	.00	.29
10	.00	.00	.00	.00	1.24	.00	.00	.00	.00	.00	.00	.37
11	.00	.00	.00	.00	.00	.05	.00	.01	.04	.19	.00	.00
12	.00	.01	.00	.00	.00	.06	.01	.00	.00	1.01	.00	.00
13	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.10	.03	.00	1.94	.74	.00	.22	.00
16	.00	.00	.00	.00	.00	.02	.00	.00	1.08	.00	1.71	.00
17	.00	.11	.00	.05	.00	.02	.00	.00	.02	.00	.86	.00
18	.00	.00	.19	.00	.00	.00	.00	.47	.00	.00	1.06	.04
19	.00	.00	.13	.00	.00	.00	.00	.00	.00	.00	.06	.00
20	.00	.00	.00	.02	.00	.00	.00	.00	1.18	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.06	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.64	.00	.00	.00
23	.00	.00	.00	.08	.00	.41	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00
25	.00	.00	.00	.02	.00	.00	.00	.00	.00	.09	.00	.00
26	.00	.00	.00	.35	.00	.00	.00	.46	.44	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00
28	.00	.00	.00	.00	.02	.00	.13	.05	.00	.00	.00	.00
29	.23	.00	.00	.00	1.82	.00	.09	.00	.00	.00	.00	.00
30	.82	-----	.16	.00	.99	.00	.00	.00	.00	.00	.00	.00
31	.04	-----	.00	-----	.01	-----	.46	.00	-----	.00	-----	.00
TOTAL	1.09	2.18	1.35	1.05	8.04	1.24	.79	4.24	4.74	1.31	6.16	.70
STAAV	.61	1.18	1.41	2.29	4.02	4.17	1.85	2.08	3.50	1.68	3.50	1.00
NOTES: YEARLY PRECIPITATION 32.89 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 21 GAGES ON THE REACH BETWEEN STATIONS 600 AND 700.												

1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 700 AT ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	91	125	105	93	103	306	70	.0	82	340	104	298
2	* 90	116	105	92	133	325	83	.0	67	216	88	287
3	91	120	103	89	99	* 620	85	.0	55	147	102	280
4	88	152	99	138	78	472	70	.0	* 53	104	* 648	270
5	89	* 267	97	305	68	367	59	.0	44	100	* 297	260
6	89	245	95	172	* 357	271	47	* 27	41	88	*1240	251
7	89	215	95	135	174	258	37	* 152	40	75	*3080	*238
8	88	208	97	* 116	* 224	240	28	119	35	* 67	*3840	258
9	86	425	124	105	229	201	* 21	99	30	55	*4010	258
10	83	405	133	100	*4042	* 175	19	54	26	52	*1870	290
11	84	272	* 127	92	*2156	165	14	43	* 22	48	1050	292
12	60	* 200	116	88	* 852	187	11	34	18	80	* 707	275
13	47	177	108	81	*1780	203	8.3	28	18	* 212	518	268
14	60	160	102	76	*1889	237	7.2	* 18	19	124	399	265
15	* 65	150	95	69	1065	188	7.2	317	28	81	325	262
16	75	140	92	69	750	248	7.2	235	* 121	70	289	262
17	75	137	89	69	562	208	5.4	98	92	62	*2290	245
18	62	137	88	69	415	* 466	4.5	166	68	56	*1230	236
19	103	130	99	84	360	* 574	2.8	166	55	53	*2790	226
20	116	124	114	110	* 322	576	* 1.9	672	590	50	*2640	240
21	101	117	107	100	286	388	1.5	*2050	* 211	* 48	*2830	258
22	105	112	107	* 296	242	262	1.2	*1470	193	46	2320	*231
23	103	110	105	250	204	246	.8	630	* 292	46	*1370	211
24	100	107	* 102	* 180	186	* 222	* .6	* 357	* 402	44	941	222
25	97	86	102	145	164	181	.3	245	295	49	688	235
26	93	100	101	130	122	143	.2	216	195	49	555	235
27	91	* 108	100	113	* 99	117	.1	208	260	49	483	231
28	92	108	99	93	76	100	.0	135	178	50	433	228
29	86	108	97	79	132	91	.0	120	128	52	394	218
30	100	-----	96	72	563	* 76	.0	133	* 490	52	352	209
31	* 132	-----	99	-----	582	-----	.0	107	-----	77	-----	200
MEAN	88	168	103	120	591	270	19	255	138	85	1263	250
INCHES	.021	.038	.025	.028	.142	.063	.005	.061	.032	.021	.294	.060

NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .000007768. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 255.300. YEARLY MEAN DISCHARGE, 278 CFS. YEARLY DISCHARGE, .790 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 611 NEAR ALEX AREA — 4,845 ACRES (7.57 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	1.17 .001	2.09 .010	1.37 .001	1.07 .001	8.55 1.239	.96 .008	.94 .000	3.33 .040	4.64 .114	.80 .000	6.09 .481	.67 .001	31.68 1.896			
STA AV 2/P Q	.56 .109	1.15 .121	1.44 .115	1.85 .186	3.96 .481	3.49 .245	2.12 .046	1.74 .037	3.23 .076	1.66 .079	3.50 .186	1.01 .118	25.71 1.799			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-9	.501	5-9	.423	5-9	.557	5-9	.649	5-9	.667	5-9	.880	5-9	.988	5-6	1.154
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 19 64	5-9 1964	.501	5-9 1964	.423	5-9 1964	.557	5-9 1964	.649	5-9 1964	.667	5-9 1964	.880	5-9 1964	.988	5-6 1964	1.154
Notes: Watershed conditions same as that described in Hydrologic Data For Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, p.68.8-1. For maps, see foregoing reference pp. 69.8-5 and 69.7-7 and 9.																
1/ Precipitation data obtained from a Thiessen weighted average of 7 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Dec. 1961. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Dec. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 9, 2,450 cfs (8.07 ft). Minimum — no flow (0.46 ft).																
PERIOD OF RECORD: Maximum — May 9, 1964, 2,450 cfs (8.07 ft). Minimum — no flow.																
PEAK DISCHARGES: (Above base of 250 cfs) 1964 — May 6, 387 cfs (4.12 ft); May 9, 2,450 cfs (8.07 ft); May 10, 779 cfs (5.26 ft); Nov. 16, 597 cfs (4.82 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
.46								0								
.75								.5								
1.04								3.0								
1.38								10								
2.26								60								
3.29								200								
4.81								600								
5.70								1,000								
6.53								1,500								
7.30								2,000								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 611 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00	.00
3	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00	1.54	.00
4	.00	1.13	.04	.60	.00	.23	.00	.00	.69	.00	.11	.00
5	.00	.64	.00	.00	.00	.00	.00	.00	.00	.00	.48	.00
6	.00	.00	.00	.00	1.81	.00	.00	.00	.00	.00	.06	.00
7	.00	.00	.00	.00	.38	.00	.00	1.53	.00	.00	.00	.00
8	.00	.00	.76	.00	.06	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.09	.00	2.25	.00	.00	.00	.00	.00	.00	.28
10	.00	.00	.00	.00	.98	.00	.00	.00	.00	.00	.00	.35
11	.00	.00	.00	.00	.00	.10	.00	.02	.00	.19	.00	.00
12	.00	.02	.00	.00	.00	.06	.00	.00	.00	.55	.00	.00
13	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
15	.00	.00	.00	.00	.01	.00	.00	1.09	.74	.00	.23	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	1.29	.00	1.92	.00
17	.00	.09	.00	.08	.00	.03	.00	.00	.00	.00	.75	.00
18	.00	.00	.20	.00	.00	.00	.00	.46	.00	.00	.94	.04
19	.00	.00	.12	.00	.00	.00	.00	.00	.00	.00	.06	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.66	.00	.00	.00
23	.00	.00	.00	.14	.00	.29	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.10	.00	.00	.00	.00	.00	.06	.00	.00
26	.00	.00	.00	.15	.00	.00	.00	.22	.60	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.41	.00	.00	.00
28	.00	.00	.00	.00	.01	.00	.42	.00	.00	.00	.00	.00
29	.33	.00	.00	.00	1.53	.00	.07	.00	.00	.00	.00	.00
30	.79	.00	.16	.00	1.52	.00	.00	.00	.00	.00	.00	.00
31	.05	.00	.00	.00	.00	.00	.31	.00	.00	.00	.00	.00
TOTAL	1.17	2.09	1.37	1.07	8.55	.96	.94	3.33	4.64	.80	6.09	.67
STA AV	.56	1.15	1.44	1.85	3.96	3.49	2.12	1.74	2.23	1.66	3.50	1.01
NOTES: YEARLY PRECIPITATION 31.68 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 7 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 611 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	5.0	.0
4	.0	.5	.0	.1	.0	.6	.0	.0	3.5	.0	1.7	.0
5	.0	* 1.4	.0	.1	.0	.1	.0	.0	.1	.0	.2	.0
6	.0	.1	.0	.0	23	.1	.0	.0	.0	.0	.2	.0
7	.0	.0	.0	.0	.2	.1	.0	6.8	.0	.0	.1	.0
8	.0	.0	.0	.0	.9	.1	.0	.1	.0	.0	.1	.0
9	.0	.0	.1	.0	113	.1	.0	.0	.0	.0	.1	.0
10	.0	.0	.0	.0	80	.1	.0	.0	.0	.0	.1	.3
11	.0	.0	.0	.0	7.1	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.3	.1	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.1	.0	.0	* 1.1	.0	.0	.1	.0
16	.0	.0	.0	.0	.1	.0	.0	.1	16	.0	35	.0
17	.0	.0	.0	.0	.1	.0	.0	.0	.1	.0	34	.0
18	.0	.0	.0	.0	.1	.0	.0	.1	.0	.0	9.3	.0
19	.0	.0	.1	.0	.1	.0	.0	.0	.0	.0	11	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.5	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.1	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0
26	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	3.2	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
29	.0	.0	.0	.0	1.0	.0	.0	.0	.0	.0	.0	.0
30	.1	.0	.0	.0	24	.0	.0	.0	.0	.0	.0	.0
31	.1	.0	.0	.0	1.3	.0	.0	.0	.0	.0	.0	.0
MEAN	.0	.1	.0	.0	8.1	.1	.0	.3	.8	.0	3.3	.0
INCHES	.001	.010	.001	.001	1.239	.008	.000	.040	.114	.000	.481	.001
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .004913. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 403.7. YEARLY MEAN DISCHARGE, 1.1 CFS. YEARLY DISCHARGE, 1.896 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 612 NEAR ALEX AREA — 563 ACRES (.88 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	1.13 .000	2.03 .000	1.38 .021	1.00 .004	7.83 .383	.84 .000	.89 .000	3.42 .004	3.68 .055	.89 .000	5.87 .186	.65 .000	29.61 .653			
STA AV 2/P 0	.53 .261	1.12 .180	1.47 .177	2.45 .432	3.69 .201	3.68 .565	2.35 .096	1.67 .001	3.17 .194	1.51 .018	3.31 .063	1.02 .278	25.97 2.466			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.2810	5-10	.1788	5-10	.2078	5-10	.219	5-10	.219	5-10	.276	5-9	.284	5-5	.307
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 61 TO 19 64	6-23 1963	.4014	6-23 1963	.3454	6-23 1963	.5487	6-23 1963	.733	6-23 1963	.756	6-23 1963	.756	6-23 1963	.756	6-23 1963	.785
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, p.69.9-1. For maps, see foregoing reference pp. 69.8-5 and 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 2 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Dec. 1961. 3/ Mean P based on 64-yr (1901-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Dec. 1961.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 160 cfs (2.63 ft). Minimum — no flow (0.39 ft). PERIOD OF RECORD: Maximum — June 23, 1963, 228 cfs (2.24 ft). Minimum — no flow (0.39 ft). PEAK DISCHARGES: (Above base of 100 cfs) 1964 — May 10, 160 cfs (2.63 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs)																
GAGE HEIGHT						DISCHARGE										
.39						0										
.64						.3										
.84						1.50										
1.59						5.0										
1.64						25										
2.24						87										
2.54						134										
2.84						200										

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 612 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.10	.00	.00	.00	.00	.00
3	.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	1.38	.00
4	.00	1.01	.04	.58	.00	.08	.00	.00	.00	.00	.11	.00
5	.00	.73	.00	.00	.00	.00	.00	.00	.00	.00	.45	.00
6	.00	.00	.01	.00	1.63	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.33	.00	.00	1.49	.00	.00	.00	.00
8	.00	.00	.72	.00	.08	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.11	.00	1.20	.00	.00	.00	.00	.00	.00	.28
10	.00	.00	.00	.00	1.39	.00	.00	.00	.00	.00	.00	.33
11	.00	.00	.00	.00	.00	.09	.00	.00	.00	.18	.00	.00
12	.00	.02	.00	.00	.00	.01	.00	.00	.00	.60	.00	.00
13	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.11	.08	.00	1.38	.75	.00	.39	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	1.18	.00	1.75	.00
17	.00	.10	.00	.05	.00	.03	.00	.00	.02	.00	.73	.00
18	.00	.00	.19	.00	.00	.00	.00	.32	.00	.00	1.00	.04
19	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.06	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.47	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.55	.00	.00	.00
23	.00	.00	.00	.12	.00	.41	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.05	.00	.00	.00	.00	.00	.11	.00	.00
26	.00	.00	.00	.20	.00	.00	.00	.23	.36	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.35	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.36	.00	.00	.00	.00	.00
29	.30	.00	.00	.00	1.54	.00	.03	.00	.00	.00	.00	.00
30	.72	-----	.17	.00	1.54	.00	.00	.00	.00	.00	.00	.00
31	.11	-----	.00	-----	.01	-----	.34	.00	-----	.00	-----	.00
TOTAL	1.13	2.03	1.38	1.00	7.83	.84	.89	3.42	3.68	.89	5.87	.65
STAAV	.53	1.12	1.47	2.45	3.69	3.68	2.35	1.67	3.17	1.51	3.31	1.02
NOTES: YEARLY PRECIPITATION 29.61 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 2 GAGES ON THE WATERSHED.												

1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 612 NEAR ALEX						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	.0
4	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0
8	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	1.5	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	5.4	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.7	.0	1.9	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.4	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0
30	.0	-----	.0	.0	1.4	.0	.0	.0	.0	.0	.0	.0
31	.0	-----	.0	-----	.0	-----	.0	.0	-----	.0	-----	.0
MEAN	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.1	.0
INCHES	.000	.000	.021	.004	.383	.000	.000	.004	.055	.000	.186	.000
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .04228. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 46.92. YEARLY MEAN DISCHARGE, .04 CFS. YEARLY DISCHARGE, .653 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 111 NEAR ANADARKO AREA — 16,640 ACRES (26.0 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.93 .072	2.30 .091	1.49 .095	1.20 .104	6.57 .443	1.57 .091	.82 .007	3.23 .017	6.53 .120	.57 .037	5.70 .262	.65 .113	31.56 1.452			
STA AV 2/P Q	.43 .116	1.17 .121	1.24 .132	1.87 .135	4.35 .283	3.98 .078	1.98 .074	2.04 .035	4.07 .112	1.32 .044	3.26 .140	.87 .104	26.58 1.374			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		6 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0564	5-10	.0538	5-10	.0962	5-10	.156	5-10	.172	5-10	.185	5-9	.324	5-9	.326
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 62 TO 19 64	5-10 1964	.0564	5-10 1964	.0538	5-10 1964	.0962	5-10 1964	.156	5-10 1964	.172	5-10 1964	.185	5-9 1964	.324	5-9 1964	.326
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, p. 69.10-1. For maps, see foregoing reference, pp. 69.7-7 and 9 and 69.10-4. 1/ Precipitation data obtained from a Thiessen weighted average of 6 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began July 1962. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; Missing months estimated. 4/ Period of record began July 1962.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 946 cfs (5.76 ft). Minimum — no flow (1.00 ft). PERIOD OF RECORD: Maximum — May 10, 1964, 946 cfs (5.76 ft). Minimum — no flow (1.00 ft). PEAK DISCHARGES: (Above base of 400 cfs) 1964 — May 9, 828 cfs (5.54 ft); May 10, 946 cfs (5.76 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
1.00								.0								
1.30								.6								
1.40								1.1								
1.50								2.0								
1.70								4.8								
1.90								9.5								
2.10								16.5								
2.40								32								
3.00								84								
3.50								157								
4.00								260								
5.00								600								

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA						WATERSHEO 111 NEAR ANAOKO					
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC					
1	.00	.00	.00	.00	.00	.00	.46	.00	.00	.00	.00	.00					
2	.00	.00	.00	.00	.00	.02	.05	.00	.00	.00	.00	.00					
3	.00	.32	.00	.01	.00	.00	.00	.00	.00	.00	1.75	.00					
4	.00	1.21	.05	.58	.00	.02	.00	.00	.28	.00	.26	.00					
5	.00	.65	.00	.00	.00	.00	.00	.00	.00	.00	.65	.00					
6	.00	.00	.01	.00	.47	.00	.00	.00	.00	.00	.01	.00					
7	.00	.00	.00	.00	.00	.00	.00	.61	.00	.00	.00	.00					
8	.00	.00	.86	.00	.21	.00	.00	.00	.00	.00	.00	.00					
9	.00	.00	.06	.00	1.62	.00	.00	.00	.00	.00	.00	.26					
10	.00	.00	.00	.00	1.43	.00	.00	.00	.00	.00	.00	.33					
11	.00	.00	.00	.00	.00	1.34	.00	.00	.14	.12	.00	.00					
12	.00	.03	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00					
13	.00	.00	.00	.00	.00	.12	.00	.00	.00	.02	.00	.00					
14	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00	.00	.00					
15	.00	.00	.00	.00	.00	.00	.00	.54	.96	.00	.26	.00					
16	.00	.00	.00	.00	.00	.00	.01	.00	.69	.00	1.26	.00					
17	.00	.09	.00	.00	.00	.63	.00	.00	.00	.00	.32	.00					
18	.00	.00	.25	.00	.00	.00	.00	1.25	.00	.00	1.17	.06					
19	.00	.00	.11	.00	.00	.00	.00	.00	.02	.00	.02	.00					
20	.00	.00	.00	.01	.00	.00	.00	.00	2.40	.00	.00	.00					
21	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00					
22	.00	.00	.00	.00	.00	.00	.00	.00	.73	.00	.00	.00					
23	.00	.00	.00	.17	.00	.04	.00	.00	.00	.00	.00	.00					
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
25	.00	.00	.00	.41	.00	.00	.01	.00	.01	.13	.00	.00					
26	.00	.00	.00	.02	.00	.00	.00	.02	1.15	.00	.00	.00					
27	.00	.00	.00	.00	.00	.00	.00	.02	.15	.00	.00	.00					
28	.00	.00	.00	.00	.00	.00	.00	.28	.00	.00	.00	.00					
29	.16	.00	.00	.00	2.04	.00	.29	.00	.00	.00	.00	.00					
30	.71	.00	.15	.00	.80	.00	.00	.00	.00	.00	.00	.00					
31	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00					
TOTAL	.93	2.30	1.49	1.20	6.57	1.57	.82	3.23	6.53	.57	5.70	.65					
STATION	.43	1.17	1.24	1.87	4.35	3.98	1.98	2.04	4.07	1.32	3.26	.87					
NOTES: YEARLY PRECIPITATION 31.56 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 6 GAGES ON THE WATERSHEO.																	
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA						WATERSHEO 111 NEAR ANAOKO					
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC					
1	1.4	2.1	1.7	2.1	1.9	2.7	2.2	.0	.5	1.1	.8	2.7					
2	1.6	2.1	2.0	2.2	2.0	2.1	1.0	.0	.5	1.1	.8	2.8					
3	1.4	2.5	1.9	2.2	1.9	2.5	.6	.0	.5	.9	3.0	2.7					
4	1.2	2.9	1.6	3.0	1.7	1.7	.4	.0	.5	.7	4.9	3.0					
5	1.3	5.8	1.2	4.1	1.6	1.7	.2	.0	.5	.6	4.8	3.0					
6	1.3	3.3	1.5	2.6	2.2	1.6	.1	.0	.5	.7	2.5	2.8					
7	1.3	1.9	1.5	2.0	1.7	1.4	.0	.0	.5	.7	1.7	2.8					
8	1.3	1.8	1.6	2.1	1.6	1.1	.0	.0	.5	.6	1.7	2.8					
9	1.0	1.8	4.6	2.6	.56	1.0	.0	.0	.5	.5	1.6	2.6					
10	1.2	1.9	2.7	2.8	1.49	1.0	.0	.0	.5	.6	4.1	2.6					
11	1.2	1.9	2.6	2.9	2.3	2.4	.0	.0	.5	.7	1.5	3.0					
12	1.1	1.9	2.5	2.8	4.4	3.9	.0	.0	.5	.7	1.6	2.6					
13	1.2	1.9	2.5	2.2	3.2	2.7	.0	.0	.5	1.4	1.5	2.5					
14	1.0	1.9	2.5	2.5	2.9	2.5	.0	.0	.5	.9	1.7	2.3					
15	1.2	1.9	2.5	2.0	2.5	2.1	.0	.0	.5	.8	2.0	2.3					
16	1.5	1.4	2.4	1.9	2.2	1.6	.0	.0	1.1	.6	2.6	2.2					
17	1.8	1.3	2.2	2.0	2.0	1.0	.0	.0	.1	.7	2.5	1.6					
18	1.9	1.9	2.0	2.3	1.8	.7	.0	5.5	.1	.5	1.9	1.6					
19	2.1	2.1	1.3	2.5	1.8	.7	.0	.5	.1	.6	2.3	2.0					
20	2.0	2.0	2.5	2.7	1.6	.7	.0	.5	3.4	.7	4.8	2.6					
21	1.9	1.8	3.1	2.7	1.4	.7	.0	.5	.5	.8	3.0	2.7					
22	2.1	1.9	2.2	2.6	1.3	.6	.0	.5	3.9	.8	2.8	2.7					
23	2.0	1.9	2.2	2.2	1.2	.7	.0	.5	.7	.8	2.7	2.7					
24	1.8	1.9	2.2	2.7	1.2	.8	.0	.5	.4	.8	2.5	2.7					
25	1.6	2.0	1.9	4.7	1.2	.7	.0	.5	.5	1.3	2.6	2.6					
26	1.7	1.6	1.7	2.1	1.0	.8	.0	.5	11	* 1.3	2.6	2.2					
27	1.6	1.6	2.1	1.3	.8	.7	.0	.5	20	1.2	2.6	2.3					
28	1.6	1.9	1.5	1.5	.8	.8	.0	.5	1.8	1.2	2.5	2.3					
29	1.8	1.6	1.8	1.6	11	.7	.0	.5	1.2	1.1	2.5	2.3					
30	3.2	1.8	1.8	1.8	21	.6	.0	.5	1.1	.9	2.5	2.2					
31	3.1	2.1	2.1	3.5	.0	.0	.0	.5	.8	.8	2.3	2.3					
MEAN	1.6	2.2	2.1	2.4	1.0	2.1	.2	.4	2.8	.8	6.1	2.5					
INCHES	.072	.091	.095	.104	.443	.091	.007	.017	.120	.037	.262	.113					
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/OAY, MULTIPLY BY .001430. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 1,387. YEARLY MEAN DISCHARGE, 2.8 CFS. YEARLY DISCHARGE, 1.452 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.																	

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 131 NEAR ANADARKO AREA — 25,660 ACRES (40.1 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P <u>1</u> / Q	.97 .016	2.51 .066	1.36 .062	1.12 .049	6.38 .166	1.25 .019	1.13 .000	3.78 .005	5.08 .004	.84 .000	6.79 .101	.70 .064	31.91 .552			
STA AV <u>2</u> /P Q	.48 .082	1.30 .102	1.24 .102	1.94 .110	3.86 .114	3.87 .026	2.35 .002	2.03 .002	3.99 .026	1.48 .021	3.78 .067	.91 .069	27.23 .723			
MEAN P <u>3</u> / 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0177	5-10	.0164	5-10	.0303	5-10	.060	5-10	.077	5-10	.085	5-9	.107	5-9	.108
MAXIMUMS FOR PERIOD OF RECORD <u>4</u> /																
1962 TO 1964	5-10 1964	.0177	5-10 1964	.0164	5-10 1964	.0303	5-10 1964	.060	5-10 1964	.077	5-10 1964	.085	5-9 1964	.107	5-9 1964	.108
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, p.69.11-1. For maps, see foregoing reference pp. 69.7-7 and 9 and 69.11-4. <u>1</u> / Precipitation data obtained from a Thiessen weighted average of 10 gages on the watershed. <u>2</u> / Precipitation records began Oct. 1961; runoff records began Sept. 1962. <u>3</u> / Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. <u>4</u> / Period of record began Sept. 1962.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 459 cfs (5.04 ft). Minimum — no flow (1.00 ft). PERIOD OF RECORD: Maximum — May 10, 1964, 459 cfs (5.04 ft). Minimum — no flow (1.00 ft). PEAK DISCHARGE: (Above base of 400 cfs) 1964 — May 10, 459 cfs (5.04 ft)																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
1.16								0.1								
1.31								0.5								
1.50								1.5								
1.80								5.2								
2.30								24								
3.00								65								
4.00								205								
5.00								465								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 131 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.41	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.43	.00	.00	.00	.00	.00
3	.00	.38	.00	.00	.00	.00	.00	.00	.00	.00	2.13	.00
4	.00	1.23	.06	.42	.00	.05	.00	.00	.30	.00	.27	.00
5	.00	.76	.00	.01	.00	.00	.00	.00	.00	.00	.73	.00
6	.00	.00	.01	.00	.75	.00	.00	.00	.00	.00	.06	.00
7	.00	.00	.00	.00	.01	.00	.00	.67	.00	.00	.01	.00
8	.00	.00	.58	.00	.37	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.12	.00	1.02	.00	.02	.00	.00	.00	.00	.28
10	.00	.00	.00	.00	1.50	.00	.00	.00	.00	.00	.00	.34
11	.00	.00	.00	.00	.00	.75	.00	.00	.14	.17	.00	.00
12	.00	.03	.00	.00	.00	.00	.00	.00	.00	.52	.00	.00
13	.00	.00	.00	.00	.00	.37	.00	.00	.00	.05	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.59	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.01	.00	.68	1.11	.00	.23	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.55	.00	1.47	.00
17	.00	.11	.00	.02	.00	.02	.00	.00	.01	.00	.49	.00
18	.00	.00	.27	.00	.00	.00	.00	1.45	.00	.00	1.38	.06
19	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.02	.00
20	.00	.00	.00	.02	.00	.00	.00	.00	1.69	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00	.00	.00
23	.00	.00	.00	.21	.00	.03	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.39	.00	.00	.00	.00	.00	.10	.00	.00
26	.00	.00	.00	.05	.00	.00	.00	.01	.47	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.03	.21	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.03	.34	.00	.00	.00	.00
29	.20	.00	.00	.00	1.99	.00	.24	.00	.00	.00	.00	.00
30	.71	-----	.18	.00	.74	.00	.00	.00	.00	.00	.00	.00
31	.06	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.02
TOTAL	.97	2.51	1.36	1.12	6.38	1.25	1.13	3.78	5.08	.84	6.79	.70
STA. AV.	.48	1.30	1.24	1.94	3.86	3.87	2.35	2.03	3.99	1.48	3.78	.91
NOTES: YEARLY PRECIPITATION 31.91 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 10 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 131 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.4	<u>1.1</u>	1.9	* 2.1	1.0	2.2	.0	<u>.0</u>	<u>.0</u>	.0	<u>.0</u>	2.2
2	.4	1.1	1.9	2.1	1.0	1.9	.0	.0	.0	.0	.0	2.4
3	* .4	1.1	* 1.9	1.9	.9	1.7	.0	.0	.0	.0	* 9.0	2.0
4	.3	* 6.4	1.9	2.5	.7	1.4	.0	.0	.0	.0	2.0	1.9
5	.5	* <u>11</u>	1.8	<u>2.5</u>	.6	1.2	.0	.0	.0	.0	1.8	1.8
6	* .5	* 4.8	1.7	2.5	3.0	1.0	.0	.0	.0	.0	.9	1.8
7	.5	2.8	<u>1.5</u>	1.9	1.1	.9	.0	.0	.0	.0	.7	2.0
8	.5	2.5	<u>2.2</u>	1.9	1.9	.9	.0	.0	.0	.0	.6	2.0
9	.4	2.2	<u>4.2</u>	1.9	1.9	.7	.0	.0	.0	.0	.5	1.9
10	.4	2.1	<u>3.0</u>	1.9	<u>72</u>	.5	.0	.0	.0	.0	.4	* <u>5.4</u>
11	.4	1.9	2.3	1.8	36	<u>2.8</u>	.0	.0	.0	.0	.4	3.2
12	.2	2.0	2.0	1.9	5.4	1.0	.0	.0	.0	.0	.4	2.7
13	<u>1</u>	1.9	2.0	1.5	3.4	1.1	.0	.0	.0	.0	* .3	2.2
14	.2	1.8	1.9	1.6	2.4	1.1	.0	.0	.0	.0	.4	2.1
15	.3	1.8	1.9	* 1.5	2.1	.6	.0	.0	.0	.0	.5	2.2
16	.5	1.6	1.9	1.4	1.9	.5	.0	.0	.0	.0	4.7	2.1
17	.8	2.1	1.9	1.5	1.5	.5	.0	.0	.0	.0	* 27	1.7
18	.6	* 2.3	* 2.2	1.5	1.2	.4	.0	* <u>5.7</u>	.0	.0	13	<u>1.2</u>
19	.7	1.9	3.9	1.6	1.1	.1	.0	.1	.0	.0	18	2.0
20	.6	1.9	2.5	1.6	1.0	<u>.0</u>	.0	.0	<u>3.5</u>	.0	4.2	2.2
21	* .6	1.8	2.2	1.5	.8	.0	.0	.0	.1	.0	2.7	2.4
22	.6	1.9	2.1	1.2	.7	.0	.0	.0	.7	.0	2.6	2.6
23	.6	1.9	2.0	1.4	.6	.0	.0	.0	.1	.0	* 2.6	2.6
24	.6	1.9	2.1	1.7	.6	.0	.0	.0	.0	.0	2.6	2.4
25	.5	1.9	1.9	2.5	.5	.0	.0	.0	.0	.0	2.6	2.2
26	.6	1.7	1.9	1.9	<u>2</u>	.0	.0	.0	.0	.0	2.5	1.8
27	.6	1.9	1.9	1.2	.4	.0	.0	.0	.1	.0	2.4	1.9
28	.6	1.9	1.8	* <u>1.0</u>	.6	.0	.0	.0	.0	.0	2.1	2.1
29	.6	1.9	1.8	1.0	* 6.6	.0	.0	.0	.0	.0	2.0	2.0
30	1.5	-----	2.0	1.0	17	.0	.0	.0	.0	.0	1.9	1.9
31	<u>1.2</u>	-----	<u>2.3</u>	-----	<u>3.7</u>	-----	.0	.0	-----	.0	-----	1.9
MEAN	.6	2.5	2.2	1.8	5.8	.7	.0	.2	.2	.0	.6	2.2
INCHES	.016	.066	.062	.049	.166	.019	.000	.005	.004	.000	.101	.064
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0009276. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 2,138. YEARLY MEAN DISCHARGE, 1.6 CFS. YEARLY DISCHARGE, .552 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 411 AT CHICKASHA AREA — 34,180 ACRES (53.4 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.96 .000	2.30 .000	1.22 .000	.92 .000	5.58 .098	1.38 .004	.69 .000	3.84 .006	4.60 .029	.54 .000	6.30 .235	.73 .000	29.06 .372			
STA AV 2/P Q	.49 .007	1.20 .011	1.24 .014	1.77 .059	3.42 .050	3.95 .058	2.12 .018	1.92 .003	3.78 .051	1.22 .001	3.54 .082	.96 .016	25.61 .370			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	11-19	.0111	11-19	.0109	11-19	.0202	11-19	.048	11-18	.068	11-18	.093	11-18	.124	11-16	.219
MAXIMUMS FOR PERIOD OF RECORD 4/																
1962 TO 1964	9-20 1962	.0138	9-20 1962	.0134	9-20 1962	.0263	9-20 1962	.063	9-20 1962	.074	6-23 1963	.095	11-18 1964	.124	11-16 1964	.219
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, p.69.12-1. For maps, see foregoing reference pp. 69.7-7 and 9 and 69.12-4. 1/ Precipitation data obtained from a Thiessen weighted average of 13 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Sept. 1962. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Sept. 1962.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — Nov. 19, 390 cfs (15.10 ft). Minimum — no flow (7.70 ft). PERIOD OF RECORD: Maximum — Sept. 20, 1962, 478 cfs (16.18 ft). Minimum — no flow (7.70 ft). PEAK DISCHARGES: (Above base of 400 cfs) 1964 — none.																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
7.70								0								
8.20								1.0								
9.10								10								
10.50								50								
11.50								100								
13.00								200								
14.20								300								
15.10								390								

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 411 AT CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.23	.00	.00	.00	.00	.00
3	.00	.21	.00	.00	.00	.00	.00	.00	.00	.00	1.83	.00
4	.00	1.24	.01	.51	.00	.09	.00	.00	.19	.00	.11	.00
5	.00	.71	.00	.00	.00	.00	.00	.00	.00	.00	.71	.00
6	.00	.00	.00	.00	.81	.00	.00	.00	.00	.00	.03	.00
7	.00	.00	.00	.00	.05	.00	.00	.76	.00	.00	.00	.00
8	.00	.00	.44	.00	.22	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.10	.00	.95	.00	.00	.00	.00	.00	.00	.26
10	.00	.00	.00	.00	1.13	.00	.00	.00	.01	.00	.00	.35
11	.00	.00	.00	.00	.00	.11	.00	.00	.09	.18	.00	.00
12	.00	.02	.00	.00	.00	.01	.00	.00	.00	.28	.00	.00
13	.00	.00	.00	.00	.00	.54	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00
15	.00	.00	.00	.00	.01	.23	.00	1.56	1.04	.00	.05	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.60	.00	1.58	.00
17	.00	.12	.00	.01	.00	.02	.00	.00	.01	.00	.63	.00
18	.00	.00	.25	.00	.00	.00	.00	.73	.00	.00	1.33	.07
19	.00	.00	.25	.00	.00	.00	.00	.00	.00	.00	.03	.00
20	.00	.00	.00	.02	.00	.00	.00	.00	1.15	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.59	.00	.00	.00
23	.00	.00	.00	.22	.00	.36	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.10	.00	.00	.00	.00	.00	.08	.00	.00
26	.00	.00	.00	.06	.00	.00	.00	.07	.70	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.03	.21	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.06	.43	.00	.00	.00	.00
29	.21	.00	.00	.00	1.71	.00	.14	.00	.00	.00	.00	.00
30	.68	-----	.17	.00	.70	.00	.00	.00	.00	.00	.00	.00
31	.07	-----	-----	-----	.00	-----	.00	.00	-----	.00	-----	.05
TOTAL	.96	2.30	1.22	.92	5.58	1.38	.69	3.84	4.60	.54	6.30	.73
STAAV	.49	1.20	1.24	1.77	3.42	3.95	2.12	1.92	3.78	1.22	3.54	.96
NOTES: YEARLY PRECIPITATION 29.06 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 13 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 411 AT CHICKASHA						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.0	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.0
4	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	15	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.5	.0
6	.0	.0	.0	.0	* 1.0	.0	.0	.0	.0	.0	.3	.0
7	.0	.0	.0	.0	.4	.0	.0	.0	.0	.0	.2	.0
8	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.1	.0	4.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	* 81	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	* 42	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	2.7	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.1	3.5	.0	* 4.1	.2	.0	.0	.0
16	.0	.0	.0	.0	.1	* 1.7	.0	.2	.1	.0	.13	.0
17	.2	.0	.0	.0	.1	.1	.0	.0	.0	.0	* 119	.0
18	.1	.0	.0	.0	.1	.0	* 4.3	.0	.0	.0	* 49	.0
19	.0	.0	.1	.0	.1	.0	.0	.1	.0	.0	* 133	.0
20	.0	.0	.0	.0	.1	.0	.0	.1	.5	.0	* 6.0	.0
21	.0	.0	.0	.0	.1	.0	.0	.1	.3	.0	.7	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.3	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	2.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	3.5	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	2.0	.0	.0	.0
29	.0	.0	.0	.0	1.0	.0	.0	.0	.7	.0	.0	.0
30	.2	-----	.0	.0	* 6.1	.0	.0	.0	.0	.0	.0	.0
31	.1	-----	.0	-----	1.8	-----	.0	.0	-----	.0	-----	.0
MEAN	.0	.0	.0	.0	4.6	.2	.0	.3	1.4	.0	.11	.0
INCHES	.000	.000	.000	.000	.098	.004	.000	.006	.029	.000	.235	.000
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/OAY, MULTIPLY BY .0006964. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 2.848. YEARLY MEAN DISCHARGE, 1.5 CFS. YEARLY DISCHARGE, .372 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 511 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.06	.00	.00	.00	.00	.00
3	.00	.17	.00	.14	.00	.00	.00	.00	.00	.00	1.65	.00
4	.00	1.05	.01	.58	.00	.15	.00	.00	.00	.00	.03	.00
5	.00	.62	.00	.00	.00	.00	.00	.00	.00	.00	.79	.00
6	.00	.00	.00	.00	.75	.00	.00	.00	.00	.00	.01	.00
7	.00	.00	.00	.00	.08	.00	.00	1.39	.00	.00	.00	.00
8	.00	.00	.45	.00	.14	.00	.07	.00	.00	.00	.00	.00
9	.00	.00	.09	.00	.73	.00	.00	.00	.00	.00	.00	.23
10	.00	.00	.00	.00	1.32	.00	.00	.00	.00	.00	.00	.37
11	.00	.00	.00	.00	.00	.04	.00	.02	.09	.14	.00	.00
12	.00	.02	.00	.00	.00	.00	.06	.00	.00	.78	.00	.00
13	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.01	.44	.00	2.22	.97	.00	.15	.00
16	.00	.00	.00	.00	.00	.01	.00	.00	.69	.00	1.03	.00
17	.00	.11	.00	.02	.00	.00	.00	.00	.61	.00	1.01	.00
18	.00	.00	.21	.00	.00	.00	.00	.40	.00	.00	1.30	.07
19	.00	.00	.23	.00	.00	.00	.00	.00	.02	.00	.04	.00
20	.00	.00	.00	.03	.00	.00	.00	.00	.77	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.07	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.54	.00	.00	.00	.00
23	.00	.00	.00	.09	.00	.25	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09	.00	.00
26	.00	.00	.00	.20	.00	.00	.00	.03	.38	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00	.00
28	.00	.00	.00	.00	.02	.00	.30	.60	.00	.00	.00	.00
29	.18	.00	.00	.00	1.82	.00	.21	.00	.00	.00	.00	.00
30	.68	-----	.13	.00	.58	.00	.00	.00	.00	.00	.00	.00
31	.04	-----	.00	-----	.00	-----	.19	.00	-----	.00	-----	.11
TOTAL	.90	1.97	1.12	1.06	5.45	1.10	1.07	4.73	3.71	1.01	6.01	.78
STAAV	.56	1.08	1.62	2.15	3.08	3.87	1.90	2.50	3.14	1.35	3.46	.99
NOTES: YEARLY PRECIPITATION 28.91 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 15 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 511 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.8	2.5	1.6	1.9	.9	2.1	.1	.0	.1	.3	.3	2.1
2	1.8	2.0	1.6 *	1.9	.9	1.5	.1	.0	.1	.3	.2	2.1
3	1.6	2.1	1.7	1.9	.9	1.5	.1	.0	.0	.3	16	2.2
4	1.5	5.7 *	1.7	<u>6.6</u>	.8	3.0	.1	.0	.0	.2	44	2.1
5	1.5	<u>12</u>	1.6	5.1	.8	1.9	<u>.0</u>	.0	.0	.2	16	2.1
6	1.5	6.4	<u>1.5</u>	3.2 *	7.5	.8	.0	.0	.0	<u>.1</u>	11	1.9
7	2.7	2.6	1.5	2.2	4.5	.5	.0	5.3	.0	.1	2.5	1.9
8	1.6	2.1	1.6	1.9	3.7	.4	.0	1.6	.0	.1	1.4	1.9
9	.9	2.0	2.9	1.6	3.1	.4	.0	.2	.0	.2 *	1.2	1.9
10	.9	2.0	<u>3.0</u>	1.6 *	<u>11.7</u>	.3	.0	.0	.0	.2	1.1	2.8
11	1.0	1.8	2.4	1.7 *	84	.2	.0	.0	.0	.2	.9	2.6
12	<u>.6</u>	1.8	1.9	1.6	5.5	.2	.0	.0	.0	11	.9	2.1
13	.7	1.9	1.9	1.3	3.6	.4	.0	.0	.0	<u>14</u>	.7	1.9
14	.7	1.7	2.3	1.3	2.5	.4	.0	.0	.0	2.5	.6	1.9
15	.8	1.7	1.7	1.3	1.8 *	3.5	.0	* <u>104</u>	.0	2.0	.8	1.9
16	1.0	1.5	1.6 *	.7	1.5	<u>5.4</u>	.0	7.2	.7	1.8	11	1.9
17	1.2	<u>1.3</u>	1.5	.7	1.2	.6	.0	1.5	3.9	1.4 *	202	1.7
18	1.3	2.0	1.7	<u>.6</u>	3.4	.8	.0	1.1	.6	.7	* 139	<u>1.4</u>
19	1.3	* 1.7	2.5	.8	1.4	.8	.0	1.2	.2	* <u>209</u>	1.5	
20	1.1	1.5	2.7	1.1 *	.7	.7	.0	.4	* <u>26</u>	.2	16	1.6
21	1.0	1.5	2.2	1.2	.6	.7	.0	.2	1.8	.2	5.4	1.7
22	.9	1.4	1.9	1.2	.6	.6	.0	.1	1.2	.2	3.8	1.9
23	* 1.1	1.7	1.9	1.3	.5	1.4	.0	.1	1.9	.2	2.6	<u>6.1</u>
24	1.2	1.6	2.0	1.3	.5	.6	.0	.1	.7	.2	2.7	2.1
25	1.3	1.7	2.0	1.3	.5	.2	.0	.1	.3	.2	3.5	2.0
26	1.4	1.7	1.8	.9	.5	<u>.1</u>	.0	.0	.9	.2	3.0	2.2
27	1.1	1.5	1.8	.8	.3	<u>.1</u>	.0	.1	20	.3	2.8	1.6
28	1.1	1.5	1.7	.9	<u>.2</u>	.1	.0	1.0	2.0	.3	2.5	1.7
29	1.2	1.5	1.6 *	.9	5.7	.1	.0	1.5	.8	.3	2.2	1.9
30	2.5	-----	1.7	.9	30	.1	.0	.4	.4	.3	2.1	1.8
31	<u>2.6</u>	-----	1.8	-----	9.6	-----	.0	.2	-----	.3	-----	1.8
MEAN	1.4	2.4	1.9	1.7	9.5	1.0	.0	4.1	2.1	1.2	24	2.1
INCHES	.026	.043	.036	.030	.180	.018	.000	.077	.038	.024	.432	.039
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0006117. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 3,242. YEARLY MEAN DISCHARGE, 4.2 CFS. YEARLY DISCHARGE .943 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO AREA — 25,150 ACRES (39.3 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.94 .000	2.24 .000	1.48 .000	1.15 .000	5.98 .156	1.45 .000	.96 .000	3.37 .000	6.32 .000	.71 .000	5.56 .020	.64 .000	30.80 .176			
STA AV 2/P Q	.44	1.13	1.22	1.96 .028	4.15 .082	3.94 .006	1.92 .000	2.04 .000	4.02 .000	1.28 .000	3.22 .010	.86 .000	26.18			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-11	.0037	5-11	.0037	5-11	.0074	5-11	.021	5-11	.038	5-11	.061	5-11	.087	5-11	.114
MAXIMUMS FOR PERIOD OF RECORD 4/																
1963 TO 1964	5-11 1964	.0037	5-11 1964	.0037	5-11 1964	.0074	5-11 1964	.021	5-11 1964	.038	5-11 1964	.061	5-11 1964	.087	5-11 1964	.114
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1963, USDA Misc. Pub.1164, p. 69.14-1. For maps, see Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub.1070, pp.69.7-7 and 9, and 69.10-4. 1/ Precipitation data obtained from a Thiessen weighted average of 10 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Apr. 1963. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Apr. 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 11, 95 cfs (8.18 ft). Minimum — no flow (5.40 ft). PERIOD OF RECORD: Maximum — May 11, 1964, 95 cfs (8.18 ft). Minimum — 1964, no flow. PEAK DISCHARGES: (Above base of 100 cfs) 1964 — none.																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, and discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
5.70								.07								
5.90								1.5								
6.40								5.4								
6.7								9.1								
7.10								17								
7.40								29								
7.80								56								
8.20								96								

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.45	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.16	.00	.00	.00	.00	.00
3	.00	.30	.00	.01	.00	.00	.00	.00	.00	.00	1.72	.00
4	.00	1.17	.04	.60	.00	.02	.00	.00	.25	.00	.28	.00
5	.00	.65	.00	.00	.00	.00	.00	.00	.00	.00	.70	.00
6	.00	.00	.00	.00	.44	.00	.00	.00	.00	.00	.01	.00
7	.00	.00	.00	.00	.00	.00	.00	.56	.00	.00	.00	.00
8	.00	.00	.86	.00	.19	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.07	.00	1.29	.00	.00	.00	.00	.00	.00	.26
10	.00	.00	.00	.00	1.40	.00	.00	.00	.00	.00	.00	.33
11	.00	.00	.00	.00	.00	1.18	.00	.00	.18	.12	.00	.00
12	.00	.03	.00	.00	.00	.00	.00	.00	.00	.39	.00	.00
13	.00	.00	.00	.00	.00	.12	.00	.00	.00	.04	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.57	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.63	1.01	.00	.27	.00
16	.00	.00	.00	.00	.00	.00	.01	.00	.70	.00	1.05	.00
17	.00	.09	.00	.00	.00	.03	.00	.00	.00	.00	.30	.00
18	.00	.00	.24	.00	.00	.00	.00	1.21	.00	.00	1.21	.05
19	.00	.00	.12	.00	.00	.00	.00	.00	.04	.00	.02	.00
20	.00	.00	.00	.01	.00	.00	.00	.00	2.05	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.62	.00	.00	.00
23	.00	.00	.00	.13	.00	.08	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
25	.00	.00	.00	.38	.00	.00	.01	.00	.01	.15	.00	.00
26	.00	.00	.00	.02	.00	.00	.00	.03	1.31	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.01	.15	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.01	.33	.00	.00	.00	.00
29	.15	.00	.00	.00	1.89	.00	.32	.00	.00	.00	.00	.00
30	.72	-----	.15	.00	.77	.00	.00	.00	.00	.00	.00	.00
31	.07	-----	.00	-----	.00	-----	.00	.00	-----	.00	-----	.00
TOTAL	.94	2.24	1.48	1.15	5.98	1.45	.96	3.37	6.32	.71	5.56	.64
STA AV	.44	1.13	1.22	1.96	4.15	3.94	1.92	2.04	4.02	1.28	3.22	.86
NOTES: YEARLY PRECIPITATION 30.80 INCHES. PRECIPITATION VALUES ARE A THIENSEN WEIGHTED AVERAGE OF 10 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 110 NEAR ANADARKO						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
21	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
22	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
23	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
26	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
31	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
MEAN	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
INCHES	.000	.000	.000	.000	.156	.000	.000	.000	.000	.000	.020	.000
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0009464. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 2.096. YEARLY MEAN DISCHARGE, .5 CFS. YEARLY DISCHARGE, .176 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 522 NEAR NINNEKAH AREA — 132,930 ACRES (207.7 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P <u>1</u> / Q	1.24 .062	2.23 .090	1.10 .076	1.30 .068	7.63 .722	1.22 .069	.80 .010	3.43 .029	4.37 .087	.67 .027	6.08 .398	.77 .095	30.84 1.733			
STA AV <u>2</u> /P Q	.58	1.24	1.27	2.12	3.93 .423	3.55 .074	2.07 .044	1.77 .018	3.98 .049	1.54 .017	3.58 .234	.91 .064	26.54			
MEAN P <u>3</u> / 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0699	5-10	.0672	5-10	.1310	5-9	.301	5-9	.364	5-9	.410	5-9	.516	5-5	.579
MAXIMUMS FOR PERIOD OF RECORD <u>4</u> /																
1963 TO 1964	5-10 1964	.0699	5-10 1964	.0672	5-10 1964	.1310	5-9 1964	.301	5-9 1964	.364	5-9 1964	.410	5-9 1964	.516	5-5 1964	.579
NOTES: Watershed conditions same as that described in Hydrologic data for Experimental Agricultural Watersheds in the United States, 1963, USDA, Misc. Pub. 1164, p. 69.15-1. For maps, see foregoing reference p. 69.15-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. <u>1</u> / Precipitation data obtained from a Thiessen weighted average of 36 gages on the watershed. <u>2</u> / Precipitation records began Oct. 1961; runoff records began May 1963. <u>3</u> / Mean P based on 64-yr (1901-64) U. S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. <u>4</u> / Period of record began May 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 9,360 cfs (20.62 ft). Minimum — July 22, no flow (6.35 ft). PERIOD OF RECORD: Maximum — May 10, 1964, 9,360 cfs (20.62 ft). Minimum — no flow. PEAK DISCHARGES: (Above base of 1,500 cfs) 1964 — May 10, 9,360 cfs (20.62 ft); May 11, 2,200 cfs (13.53 ft); Nov. 17, 1,560 cfs (13.00 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
						GAGE HEIGHT			DISCHARGE							
						7.20			1.4							
						7.35			5.4							
						7.50			12							
						7.80			34							
						8.00			77							
						8.50			148							
						9.00			288							
						10.00			725							
						11.50			1,850							

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 522 NEAR NINNEKAH						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.22	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.01	.30	.00	.00	.00	.00	.00
3	.00	.35	.00	.01	.00	.00	.00	.00	.00	.00	1.83	.00
4	.00	1.16	.05	.53	.00	.04	.00	.00	.22	.00	.19	.00
5	.00	.60	.00	.00	.00	.00	.00	.00	.00	.00	.71	.00
6	.00	.00	.00	.00	1.37	.00	.00	.00	.00	.00	.05	.00
7	.00	.00	.00	.00	.38	.00	.00	.75	.00	.00	.00	.00
8	.00	.00	.48	.00	.17	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.08	.00	2.11	.00	.00	.00	.00	.00	.00	.32
10	.00	.00	.00	.00	.75	.00	.00	.00	.00	.00	.00	.35
11	.00	.00	.00	.00	.00	.30	.00	.02	.04	.18	.00	.00
12	.00	.03	.00	.00	.00	.09	.00	.00	.00	.37	.00	.00
13	.00	.00	.00	.00	.00	.60	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.21	.00	.00	.00	.00
15	.00	.00	.00	.00	.01	.00	.00	.38	.92	.00	.06	.00
16	.00	.00	.00	.00	.00	.01	.00	.34	.54	.00	1.42	.00
17	.00	.09	.00	.02	.00	.03	.00	.00	.02	.00	.70	.00
18	.00	.00	.23	.00	.00	.00	.00	1.49	.00	.00	1.09	.06
19	.00	.00	.14	.00	.00	.00	.00	.00	.00	.00	.03	.00
20	.00	.00	.00	.05	.00	.00	.00	.00	1.13	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.81	.00	.00	.00	.00
23	.00	.00	.00	.43	.00	.14	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.20	.00	.00	.03	.00	.00	.12	.00	.00
26	.00	.00	.00	.06	.00	.00	.01	.14	.39	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.29	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.03	.08	.01	.00	.00	.00
29	.35	.00	.00	.00	1.60	.00	.16	.01	.00	.00	.00	.00
30	.85		.12	.00	1.24	.00	.00	.00	.00	.00	.00	.00
31	.04		.00		.00		.05	.00		.00		.04
TOTAL	1.24	2.23	1.10	1.30	7.63	1.22	.80	3.43	4.37	.67	6.08	.77
STAAV	.58	1.24	1.27	2.12	3.93	3.55	2.07	1.77	3.98	1.54	3.58	.91
NOTES: YEARLY PRECIPITATION 30.84 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 36 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 522 NEAR NINNEKAH						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	11	19	13	13	* 10	32	3.0	.0	.0	5.4	6.7	21
2	12	16	13	13	12	* 22	* 13	.0	.0	5.4	7.2	19
3	12	16	13	* 12	12	19	10	.0	.0	5.1	14.8	17
4	12	* 45	13	14	11	17	5.0	.0	.0	4.2	187	17
5	12	* 56	* 13	19	10	16	4.5	.0	.0	3.3	36	16
6	12	35	14	14	* 134	15	4.0	.0	.0	3.1	28	16
7	12	19	14	11	21	13	2.2	1.2	.0	3.3	21	* 16
8	12	15	14	11	81	12	2.0	3.0	.0	2.9	17	16
9	12	14	23	11	230	10	2.1	.9	.0	2.4	* 15	19
10	* 8.2	13	21	11	* 2160	10	2.1	.1	.0	* 2.7	14	* 25
11	8.2	12	16	11	* 530	20	1.9	.0	.0	2.8	12	22
12	7.0	12	13	12	52	19	1.9	.0	.0	5.5	12	15
13	9.0	13	13	11	37	36	1.6	.0	.0	7.5	11	13
14	8.0	13	13	11	* 33	20	1.2	.0	.0	5.8	12	14
15	7.0	12	12	11	28	13	1.0	.3	.4	5.1	13	14
16	6.0	11	12	* 11	26	12	.7	.2	* 51	4.9	25	15
17	7.0	11	12	11	24	* 12	.5	.4	13	4.3	* 501	11
18	7.0	13	13	11	22	11	.5	* 129	* 5.8	3.3	299	12
19	8.0	13	* 16	11	20	10	.3	* 16	3.0	1.8	* 423	24
20	12	* 13	16	12	18	9.5	.2	5.5	* 225	3.0	* 149	* 31
21	12	14	14	13	* 17	8.3	.1	1.8	* 28	4.4	74	* 24
22	* 12	13	13	12	17	7.6	.0	1.1	44	* 5.1	36	18
23	12	15	13	13	17	7.1	.0	.7	24	4.9	* 22	17
24	12	16	13	27	17	6.7	.0	.5	13	4.9	22	16
25	12	17	13	15	16	6.1	.0	* .4	9.7	5.9	21	16
26	13	15	12	14	16	5.6	.0	.2	9.1	6.7	21	13
27	11	13	12	12	16	5.0	.0	.6	34	6.7	23	14
28	11	13	12	10	18	4.1	.0	.2	* 13	6.9	24	15
29	11	13	12	10	39	3.7	.2	.1	7.2	7.2	22	15
30	18		12	10	* 269	3.2	.1	.2	5.4	7.2	21	15
31	26		13		119		.0	.0		6.9		15
MEAN	11	17	14	13	130	13	1.9	5.2	16	4.8	74	17
INCHES	.062	.090	.076	.068	.722	.069	.010	.029	.087	.027	.398	.095
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .0001791. TO CONVERT DISCHARGE IN INCHES TO AC-Ft, MULTIPLY BY 11,080. YEARLY MEAN DISCHARGE, 26.4 CFS. YEARLY DISCHARGE 1.733 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER AREA — 22,780 ACRES (35.6 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.95 .081	2.09 .101	1.24 .090	1.03 .075	6.53 .481	2.05 .089	1.07 .001	5.01 .171	4.25 .170	1.65 .124	6.70 .744	.72 .139	33.29 2.266			
STA AV 2/P Q	.61	1.17	1.54	2.29	3.49	4.74	1.90	2.73 .090	3.92 .090	1.66 .072	3.60 .414	1.00 .108	28.65			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0608	5-10	.0582	5-10	.1112	5-10	.228	5-10	.250	5-10	.261	5-9	.389	5-6	.397
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 1964	5-10 1964	.0608	5-10 1964	.0582	5-10 1964	.1112	5-10 1964	.228	5-10 1964	.250	5-10 1964	.261	5-9 1964	.389	5-6 1964	.397
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1963, USDA Misc. Pub. 1164, p. 69.16-1. For maps, see foregoing reference p. 69.16-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 10 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Aug. 1963. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Aug. 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 1,400 cfs (8.75 ft). Minimum — July 6, no flow (1.00 ft). PERIOD OF RECORD: Maximum — May 10, 1,400 cfs (8.75 ft). Minimum — no flow (1.00 ft). PEAK DISCHARGES: (Above base of 500 cfs) 1964 — May 9, 830 cfs (7.05 ft); May 10, 1,400 cfs (8.75 ft); Aug. 20, 890 cfs (7.27 ft); Oct. 12, 630 cfs (6.25 ft); Nov. 17, 1,300 cfs (8.51 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
1.00				.0				5.00				300				
1.49				1.0				5.80				500				
1.95				6.0				6.57				700				
2.50				20				7.30				900				
3.71				100				7.93				1,100				

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1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.11	.00	.17	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.02	.03	.00	.00	.00	.00	.00
3	.00	.20	.00	.00	.00	.00	.00	.00	.00	.00	1.56	.00
4	.00	1.07	.03	.61	.00	.55	.00	.00	.00	.00	.04	.00
5	.00	.69	.00	.00	.00	.00	.00	.00	.00	.00	.78	.00
6	.00	.00	.00	.00	1.05	.00	.00	.00	.00	.00	.12	.00
7	.00	.00	.00	.00	.22	.00	.00	1.85	.00	.00	.00	.00
8	.00	.00	.56	.00	.09	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.11	.00	1.22	.00	.00	.00	.00	.00	.00	.24
10	.00	.00	.00	.00	1.28	.00	.00	.00	.00	.00	.00	.38
11	.00	.00	.00	.00	.00	.12	.00	.00	.04	.19	.00	.00
12	.00	.02	.00	.00	.00	.02	.05	.00	.00	1.38	.00	.00
13	.00	.00	.00	.00	.00	.36	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.02	.36	.00	2.18	.85	.00	.43	.00
16	.00	.00	.00	.00	.00	.03	.00	.00	.63	.00	1.67	.00
17	.00	.11	.00	.02	.00	.00	.00	.00	.00	.00	.86	.00
18	.00	.00	.20	.00	.00	.00	.00	.42	.00	.00	1.18	.06
19	.00	.00	.19	.00	.00	.00	.00	.00	.00	.00	.06	.00
20	.00	.00	.00	.06	.00	.00	.00	.00	1.32	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.04	.03	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.58	.00	.00	.00
23	.00	.00	.00	.04	.00	.59	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00
26	.00	.00	.00	.30	.00	.00	.00	.05	.52	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.01	.00	.28	.00	.00	.00
28	.00	.00	.00	.00	.04	.06	.36	.47	.00	.00	.00	.00
29	.20	.00	.00	.00	1.82	.00	.32	.00	.00	.00	.00	.00
30	.70		.15		.68	.00	.00	.00	.00	.00	.00	.00
31	.05		.00		.00		.13	.00		.00		.04
TOTAL	.95	2.09	1.24	1.03	6.53	2.05	1.07	5.01	4.25	1.65	6.70	.72
STA AV	.61	1.17	1.54	2.29	3.49	4.74	1.90	2.73	3.92	1.66	3.60	1.00
NOTES: YEARLY PRECIPITATION 33.29 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 10 GAGES ON THE WATERSHED.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHED 512 AT TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	2.7	3.1	2.4	2.9	1.5	2.8	.3	.0	.0	1.2	4.3	3.9
2	2.6	2.7	2.4	2.7	1.9	2.8	.5	.0	.0	1.1	1.3	4.3
3	2.6	3.2	2.4	2.4	1.5	2.6	.3	.0	.0	.9	* 23	4.2
4	2.4	* 6.8	* 2.5	3.4	1.2	* 3.1	.2	.0	.0	.8	* 20	3.8
5	2.5	* 1.2	2.5	5.1	1.2	6.8	.1	.0	.0	.6	19	6.1
6	2.6	5.6	2.4	3.0	* 20	3.1	.0	.0	.0	.6	8.9	3.9
7	2.5	3.6	2.4	2.4	3.1	2.3	* 8.0	.0	.0	.6	5.6	3.8
8	2.5	3.3	2.7	2.2	3.3	1.7	.0	2.1	.0	.7	2.5	4.1
9	* 2.5	3.0	5.6	3.2	3.2	1.5	.0	.6	.0	* .7	* 2.3	4.2
10	2.5	3.0	3.9	2.2	* 29.0	1.4	.0	.2	.0	.6	2.1	* 7.2
11	2.4	2.7	3.1	2.2	50	1.6	.0	.1	.0	.7	2.0	5.7
12	1.1	3.0	2.6	2.1	6.4	1.6	.0	.0	.0	4.9	1.7	4.8
13	1.7	2.9	2.6	1.9	4.5	2.6	.0	.0	.0	37	1.7	4.3
14	1.7	2.6	2.5	2.0	3.1	2.4	.0	.0	.0	3.6	1.9	4.1
15	1.9	2.7	2.4	2.1	3.3	2.8	.0	* 70	.0	2.2	3.0	4.1
16	2.4	2.6	2.4	2.0	3.2	3.7	.0	3.7	3.2	1.0	53	4.2
17	2.5	2.8	* 2.4	2.1	3.1	1.6	.0	1.4	1.0	1.1	* 260	3.6
18	2.8	3.1	2.7	2.2	2.4	1.1	.0	2.0	.4	.9	103	3.3
19	3.0	* 2.7	4.2	2.2	2.1	.9	.0	.9	.3	.8	131	3.9
20	2.6	2.7	3.2	2.4	* 1.9	.7	.0	.4	* 123	.8	* 13	4.2
21	2.6	2.5	2.7	2.5	1.7	.6	.0	.3	3.2	1.1	8.9	4.5
22	2.6	2.6	2.7	2.1	1.6	.5	.0	.2	5.4	1.0	7.0	4.5
23	* 2.6	2.7	2.6	2.2	1.5	* 3.4	.0	.1	3.0	1.0	6.4	4.6
24	2.3	2.7	2.6	2.2	1.4	2.6	.0	.0	1.2	1.0	5.9	4.5
25	2.2	2.7	2.5	2.0	1.4	.9	.0	.0	.9	1.1	5.7	4.1
26	2.2	2.4	2.4	3.6	1.2	.6	.0	.4	2.1	1.2	5.4	3.8
27	2.2	2.5	2.6	2.5	1.5	.5	.0	.1	1.4	1.4	4.9	3.7
28	2.2	2.5	2.6	1.7	1.3	.4	.0	.9	2.6	1.3	4.9	4.1
29	2.3	2.4	1.6	1.6	11	.4	.0	.6	1.5	1.4	4.3	4.1
30	3.9		2.6	* 1.5	25	.3	.0	.2	1.3	1.4	3.8	3.8
31	5.2		2.9		7.0		.0			1.3		3.8
MEAN	2.5	3.3	2.8	2.4	15	2.8	.0	5.3	5.4	3.8	24	4.3
INCHES	.081	.101	.090	.075	.481	.089	.001	.171	.170	.124	.744	.139
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/DAY, MULTIPLY BY .001045. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 1,898. YEARLY MEAN DISCHARGE, 5.9 CFS. YEARLY DISCHARGE 2.266 INCHES. MAXIMUM AND MINIMUM FLOWS EACH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 621 NEAR TABLER AREA — 21,310 ACRES (33.3 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	1.01 .085	2.22 .115	1.31 .095	1.05 .094	7.77 .940	1.51 .116	.62 .002	4.06 .150	4.93 .271	1.30 .052	6.60 .812	.71 .151	33.09 2.883			
STA AV 2/P Q	.63	1.19	1.42	2.48	4.05	4.51	1.59	2.21	3.88	1.62 .032	3.56 .446	1.01 .112	28.15			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.2074	5-10	.1790	5-10	.2690	5-10	.337	5-10	.350	5-9	.618	5-9	.672	5-5	.790
MAXIMUMS FOR PERIOD OF RECORD 4/																
1963 TO 1964	5-10 1964	.2074	5-10 1964	.1790	5-10 1964	.2690	5-10 1964	.337	5-10 1964	.350	5-9 1964	.618	5-9 1964	.672	5-5 1964	.790
Notes: Watershed conditions same as that described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1963, USDA Misc. Pub.1164, p. 69.17-1. For maps, see foregoing reference p. 69.17-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. 1/ Precipitation data obtained from a Thiessen weighted average of 9 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1963. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — May 10, 4,460 cfs E (8.62 ft). Minimum — no flow (1.00 ft). PERIOD OF RECORD: Maximum — May 10, 1964, 4,460 cfs E (8.62 ft). Minimum — no flow (1.00 ft). PEAK DISCHARGES: (Above base of 500 cfs) 1964 — May 6, 789 cfs (5.50 ft); May 9, 3,590 cfs E (8.13 ft); May 10, 4,460 cfs E (8.62 ft); Sept. 20, 1,600 cfs E (6.58 ft); Nov. 17, 2,360 cfs E (7.28 ft); Nov. 19, 1,240 cfs E (6.16 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
GAGE HEIGHT								DISCHARGE								
1.00								0								
1.36								1.0								
1.68								5.0								
2.28								25								
3.25								100								
4.93								500								
5.90								1,000								
7.00								2,000								

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHEO 621 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.35	.00	.12	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.01	.02	.00	.00	.00	.00	.00
3	.00	.23	.00	.00	.00	.00	.00	.00	.00	.00	1.55	.00
4	.00	1.13	.04	.53	.00	.52	.00	.00	.17	.00	.06	.00
5	.00	.72	.00	.00	.00	.00	.00	.00	.00	.00	.76	.00
6	.00	.00	.00	.00	1.43	.00	.00	.00	.00	.00	.06	.00
7	.00	.00	.00	.00	.29	.00	.00	.93	.00	.00	.00	.00
8	.00	.00	.72	.00	.07	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.08	.00	1.51	.00	.00	.00	.00	.00	.00	.29
10	.00	.00	.00	.00	1.47	.00	.00	.00	.00	.00	.00	.36
11	.00	.00	.00	.00	.00	.04	.00	.00	.09	.20	.00	.00
12	.00	.02	.00	.00	.00	.11	.03	.00	.00	1.00	.00	.00
13	.00	.00	.00	.00	.00	.24	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.04	.05	.00	2.26	.73	.00	.22	.00
16	.00	.00	.00	.00	.00	.03	.00	.00	.99	.00	1.85	.00
17	.00	.12	.00	.03	.00	.00	.00	.00	.02	.00	.89	.00
18	.00	.00	.19	.00	.00	.00	.00	.37	.00	.00	1.16	.04
19	.00	.00	.15	.00	.00	.00	.00	.00	.00	.00	.05	.00
20	.00	.00	.00	.04	.00	.00	.00	.00	1.52	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.09	.01	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00	.00
23	.00	.00	.00	.09	.00	.51	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00
26	.00	.00	.00	.36	.00	.00	.00	.31	.53	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.27	.00	.00	.00
28	.00	.00	.00	.00	.05	.00	.07	.10	.00	.00	.00	.00
29	.20	.00	.00	.00	1.91	.00	.17	.00	.00	.00	.00	.00
30	.77	-----	.13	.00	.63	.00	.00	.00	.00	.00	.00	.00
31	.04	-----	.00	-----	.02	-----	.21	.00	-----	.00	-----	.02
TOTAL	1.01	2.22	1.31	1.05	7.77	1.51	.62	4.06	4.93	1.30	6.60	.71
ST. AN	.63	1.19	1.42	2.48	4.05	4.51	1.59	2.21	3.88	1.62	3.56	1.01
NOTES: YEARLY PRECIPITATION 33.09 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 9 GAGES ON THE WATERSHEO.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHEO 621 NEAR TABLER						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	2.5	3.1	2.0	2.1	1.8	4.3	.9	.0	.0	1.4	1.0	4.6
2	2.4	2.7	2.2	2.2	8.6	3.9	.8	.0	.0	1.1	1.0	4.7
3	2.1	4.0	2.4	2.6	2.1	3.6	.2	.0	.0	1.0	2.4	4.6
4	2.1	* 11	* 2.5	4.8	1.4	<u>4.2</u>	.0	.0	1.7	.8	1.7	4.1
5	2.3	* <u>19</u>	2.4	5.2	<u>1.3</u>	9.5	.0	.0	.6	.8	1.9	3.9
6	2.7	6.2	2.4	3.0	* 79	4.0	.0	.0	.0	.9	4.4	4.1
7	2.5	3.4	2.2	2.0	3.6	2.7	* 21	.0	.0	.8	2.5	4.4
8	2.7	3.0	2.5	2.0	5.9	* 1.6	.0	.2	.0	* .8	2.0	4.9
9	* 2.3	2.9	<u>7.9</u>	2.3	* 157	1.7	.0	.0	.0	.8	* 1.9	4.2
10	2.1	2.7	4.1	2.4	<u>419</u>	* 1.9	.0	.0	.0	.8	1.9	<u>8.6</u>
11	2.3	2.7	3.2	2.2	* 29	2.1	.0	.0	.0	.9	2.0	5.0
12	.6	3.3	2.7	2.4	12	2.3	.0	.0	.0	<u>2.0</u>	1.8	4.7
13	<u>.4</u>	3.3	2.7	1.8	* 7.0	* 3.9	.0	.0	.0	<u>7.9</u>	1.8	4.2
14	.7	2.4	2.7	* 2.0	4.8	2.5	.0	.0	.0	1.6	2.1	4.0
15	1.2	2.4	2.4	2.1	5.2	1.6	.0	* <u>8.6</u>	1.8	1.4	3.0	4.0
16	2.2	2.2	2.4	2.4	5.1	1.9	.0	1.5	* 31	1.0	93	3.9
17	3.6	2.7	* 2.6	2.8	5.0	1.6	.0	.8	1.7	1.0	<u>266</u>	<u>1.9</u>
18	3.4	2.8	3.1	3.4	3.9	1.2	.0	3.7	.8	.7	77	2.8
19	3.2	* 2.2	5.0	3.3	3.6	1.2	.0	.6	.6	.7	150	4.0
20	2.4	2.3	3.1	3.3	* 3.2	.9	.0	.1	* <u>156</u>	.8	7.5	5.0
21	2.9	2.1	2.7	3.3	2.6	.5	.0	.2	3.0	.9	5.8	5.4
22	2.9	2.1	2.9	2.9	2.5	.3	.0	.1	* 6.4	1.0	5.6	4.9
23	* 2.7	2.4	2.8	3.0	2.3	3.9	.0	.1	2.2	1.0	5.4	4.9
24	2.3	2.0	2.9	3.2	2.2	1.7	.0	.0	1.6	1.0	5.3	4.5
25	1.9	2.3	2.4	2.8	2.1	1.2	.0	.0	1.5	1.0	4.9	4.0
26	2.1	<u>1.9</u>	2.0	<u>5.6</u>	1.8	.7	.0	18	1.9	1.5	4.7	3.9
27	2.0	2.1	1.8	3.3	2.3	.4	.0	1.2	27	1.2	4.7	4.0
28	1.8	2.0	<u>1.5</u>	2.2	2.0	.4	.0	.5	1.8	1.3	4.3	4.2
29	2.2	2.1	* 1.9	1.7	17	<u>.2</u>	.0	.2	1.5	1.3	3.9	4.2
30	5.0	-----	2.1	<u>1.7</u>	38	.2	.0	.0	1.5	1.2	3.9	3.8
31	<u>6.3</u>	-----	2.2	-----	11	-----	.0	.0	-----	1.1	-----	4.2
MEAN	2.4	3.6	2.8	2.8	27	3.5	.1	4.3	8.1	1.5	24	4.4
INCHES	.085	.115	.095	.094	.940	.116	.002	.150	.271	.052	.812	.151
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/OAY, MULTIPLY BY .00117. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 1.776. YEARLY MEAN DISCHARGE, 7.1 CFS. YEARLY DISCHARGE, 2.683 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

MONTHLY PRECIPITATION AND RUNOFF (inches)						CHICKASHA, OKLAHOMA WATERSHED 121 AT GRACEMONT AREA — 128,960 ACRES (201.5 SQ. MILES)										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.70 .031	1.94 .059	.92 .048	1.37 .040	5.07 .149	1.19 .019	.62 .000	4.00 .001	4.37 .000	.73 .000	3.97 .011	.59 .016	25.47 .374			
STA AV 2/P Q	.47	.89	.94	1.87	2.91	5.04	1.58	2.17	5.10	1.63 .002	2.56 .013	.77 .023	25.93			
MEAN P 3/ 64 YR	1.17	1.23	2.02	3.31	5.12	3.85	2.54	2.52	3.28	2.97	1.80	1.42	31.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	5-10	.0076	5-10	.0075	5-10	.0146	5-10	.033	5-10	.046	5-10	.063	5-10	.087	5-10	.128
MAXIMUMS FOR PERIOD OF RECORD 4/																
19 63 TO 19 64	5-10 1964	.0076	5-10 1964	.0075	5-10 1964	.0146	5-10 1964	.033	5-10 1964	.046	5-10 1964	.063	5-10 1964	.087	5-10 1964	.128
Notes: Watershed conditions same as described in Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1963, USDA Misc. Pub. 1164, p. 69.18-1. For maps, see foregoing reference p. 69.18-4 and Hydrologic Data for Experimental Agricultural Watersheds in the United States, 1962, USDA Misc. Pub. 1070, pp. 69.7-7 and 9. The stream gaging station was maintained from Oct. 1955 to Oct. 1963 by the U.S. Geological Survey. 1/ Precipitation data obtained from a Thiessen weighted average of 32 gages on the watershed. 2/ Precipitation records began Oct. 1961; runoff records began Oct. 1963. 3/ Mean P based on 64-yr (1901-64) U.S. Weather Bureau record period at Chickasha, Okla.; missing months estimated. 4/ Period of record began Oct. 1963.																
MISCELLANEOUS DATA																
RUNOFF PEAK DATA: YEAR (1964): Maximum — June 11, 990 cfs (8.75 ft). Minimum — no flow (4.36 ft). PERIOD OF RECORD: Maximum — June 11, 1964, 990 cfs (8.75 ft). Minimum — no flow. PEAK DISCHARGES: (Above base of 900 cfs) 1964 — June 11, 990 cfs (8.75 ft).																
ABBREVIATED RATING TABLE: 1964 (Stage recorder datum; gage height in ft, discharge in cfs).																
Jan. 1 - May 10								May 11 - Dec. 31								
GAGE HEIGHT				DISCHARGE				GAGE HEIGHT				DISCHARGE				
4.00				1.4				4.60				1.2				
4.30				6.7				4.80				3.6				
4.60				16				5.00				8.5				
5.00				37				5.20				20				
5.50				77												
6.50				210												
7.50				470												
8.50				850												

Cooperative Research Project of USDA and Oklahoma Agricultural Experiment Station

1964 DAILY PRECIPITATION (inches)						CHICKASHA, OKLAHOMA WATERSHEO 121 AT GRACEMONT						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	.00	.00	.00	.00	.00	.00	.44	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.03	.01	.00	.00	.00	.00	.00
3	.00	.18	.00	.06	.00	.00	.00	.00	.00	.00	1.50	.00
4	.00	1.16	.03	.32	.00	.02	.00	.00	.13	.00	.10	.00
5	.00	.43	.00	.00	.00	.00	.00	.00	.03	.00	.62	.00
6	.00	.00	.00	.00	.39	.00	.00	.00	.00	.00	.02	.00
7	.00	.00	.00	.00	.01	.00	.00	.57	.00	.00	.00	.00
8	.00	.00	.05	.00	.03	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.16	.00	.12	.00	.02	.00	.00	.00	.00	.16
10	.00	.00	.00	.00	2.14	.00	.00	.02	.00	.00	.00	.31
11	.00	.00	.00	.00	.00	.76	.00	.00	.55	.03	.00	.00
12	.00	.00	.00	.00	.00	.01	.00	.00	.00	.13	.00	.00
13	.00	.00	.00	.00	.00	.29	.00	.00	.00	.02	.00	.00
14	.00	.12	.00	.00	.00	.00	.00	.72	.00	.00	.00	.00
15	.00	.01	.00	.00	.21	.04	.00	1.01	1.22	.00	.30	.00
16	.00	.00	.00	.43	.00	.00	.00	.02	.31	.00	.35	.00
17	.00	.04	.00	.49	.00	.00	.00	.01	.01	.00	.43	.00
18	.00	.00	.28	.00	.00	.00	.00	.92	.00	.00	.65	.07
19	.00	.00	.26	.00	.00	.00	.00	.00	.21	.00	.00	.00
20	.00	.00	.00	.01	.00	.00	.00	.11	1.21	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.41	.00	.00	.00
23	.00	.00	.00	.01	.00	.04	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.04	.00	.00	.00	.00	.00	.13	.00	.00
25	.00	.00	.00	.01	.00	.00	.01	.00	.01	.41	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.09	.07	.01	.00	.00
27	.00	.00	.00	.00	.01	.00	.00	.35	.21	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.03	.14	.00	.00	.00	.00
29	.03	.00	.00	.00	1.40	.00	.06	.00	.00	.00	.00	.00
30	.60		.14	.00	.76	.00	.00	.00	.00	.00	.00	.00
31	.07		.00		.00		.05	.00		.00		.05
TOTAL	.70	1.94	.92	1.37	5.07	1.19	.62	4.00	4.37	.73	3.97	.59
STA AV	.47	.89	.94	1.87	2.91	5.04	1.58	2.17	5.10	1.63	2.56	.77
NOTES: YEARLY PRECIPITATION 25.47 INCHES. PRECIPITATION VALUES ARE A THIESSEN WEIGHTED AVERAGE OF 32 GAGES ON THE WATERSHEO.												
1964 MEAN DAILY DISCHARGE (cfs)						CHICKASHA, OKLAHOMA WATERSHEO 121 AT GRACEMONT						
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	6.8	9.6	8.0	7.8	3.6 *	10	.0	.0	.0	.0	.0	1.7
2	7.4	8.5	7.6	7.8	2.9	8.7	.0	.0	.0	.0	.0	1.3
3	6.0	8.0	7.5	6.9	2.0	7.6	.0	.0	.0	.0	.0	.9
4	4.7 *	2.2	7.3	8.8	1.4	5.4	.0	.0	.0	.0	6.1	.7
5	5.3 *	4.4	7.3	12	1.4	5.0	.0	.0	.0	.0	4.6	.6
6	* 5.3	32	7.7	9.0	4.5	4.4	.0	.0	.0	.0	4.0	1.2
7	5.5	20	7.2	* 7.2	2.6	3.7	.0	.0	.0	.0	2.5	* 2.8
8	5.1	13	7.8	6.4	3.0	2.8	.0	.0	.0	.0	2.8	2.9
9	3.5	12	9.0	6.0	1.7	1.9	.0	.0	.0	.0	* 1.2	3.2
10	3.8	11	11	* 5.6	1.40	1.8	.0	.0	.0	.0	.6	4.5
11	3.5	9.0	* 11	5.2	* 2.27	* 4.4	.0	.0	.0	.0	.3	3.6
12	4.0	8.8	8.6	4.9	* 1.20	3.9	.0	.0	.0	.0	.0	2.8
13	3.5	8.4	8.2	4.3	.68	3.5	.0	.0	.0	.0	.0	2.5
14	3.7	8.4	7.3	4.3	.51	9.8	.0	.0	.0	.0	.0	2.2
15	4.4	8.8	6.7	4.3	* .37	6.5	.0	.0	.0	.0	.0	3.2
16	4.3	8.6	6.5	4.0	22	4.6	.0	.0	.0	.0	1.4	2.8
17	4.5	8.8	6.2	21	16	3.9	.0	.0	.0	.0	* 3.7	1.4
18	4.7	9.0	6.8	12	14	3.0	.0	* 3.0	.0	.0	* 4.9	1.2
19	5.0	8.0	10	11	11	2.2	.0	.0	.0	.0	* 6.7	1.3
20	5.3	7.4	20	10	7.4	1.5	.0	.0	.0	.0	4.6	4.2
21	6.2	7.5	10	10	5.0	1.0	.0	.0	.0	.0	3.4	6.0
22	7.0	7.4	9.2	* 10	3.3	.7	.0	.0	.0	.0	2.8	5.7
23	7.2	7.8	* 9.2	8.0	2.7	1.4	.0	.0	.0	.0	* 2.1	* 4.6
24	6.1	8.2	8.2	7.0	2.7	1.8	.0	.0	.0	.0	1.7	4.2
25	5.0 *	8.8	8.4	6.0	* 2.0	1.1	.0	.0	.0	.0	1.5	3.6
26	5.3	8.0	7.5	5.2	1.5	.4	.0	.0	.0	.0	1.4	3.3
27	5.2	7.9	7.5	4.5	1.4	.0	.0	.0	.0	.0	1.3	3.2
28	4.2	8.2	6.8	3.8	1.4	.0	.0	.0	.0	.0	1.2	3.5
29	5.1	8.2	6.5	3.3	5.2	.0	.0	.0	.0	.0	1.0	3.6
30	7.8		7.2	2.8	32	.0	.0	.0	.0	.0	.3	3.2
31	12		8.0		16		.0	.0		.0		3.3
MEAN	5.4	11	8.4	7.3	27	3.4	.0	.1	.0	.0	2.0	2.9
INCHES	.031	.059	.048	.040	.149	.019	.000	.001	.000	.000	.011	.016
NOTES: TO CONVERT MEAN DAILY DISCHARGE IN CFS TO IN/OAY, MULTIPLY BY .0001846. TO CONVERT DISCHARGE IN INCHES TO AC-FT, MULTIPLY BY 10,750. YEARLY MEAN DISCHARGE, 5.5 CFS. YEARLY DISCHARGE, .374 INCHES. MAXIMUM AND MINIMUM FLOWS EACH MONTH UNDERLINED. * DISCHARGE MEASUREMENTS.												

TREYNOR, IOWA WATERSHED 1

LOCATION: Pottawattamie County, Iowa; approximately 6 miles southwest of Treynor; Silver Creek, West Nishnabotna River, Missouri River Basin.

AREA: 74.5 acres.

SLOPES:	Slope-Percent	0-1	2-4	5-8	9-13	14-19
	Percent of area	0	39	13	36	12

SOILS: The soils of this watershed have developed from Wisconsin loess which overlies Kansan glacial till. The loess depths vary from 10 to 90 ft. Outcrops of glacial till are not evident. Geological erosion has removed much of the topsoil on the side-slopes, thus the topsoil depths are variable.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Monona silt loam	38	6	Weak fine to medium granular	Moderately rapid	Weak fine subangular blocky	Moderately rapid	20-40	Moderately rapid	Medium
Marshall silty clay loam	35	10	Weak fine to medium subangular blocky	Moderate	Weak to moderate fine to medium subangular blocky	Moderate	30-60	Moderate to moderately rapid	Medium
Napier silt loam (local alluvium)	16	30	Weak fine to medium subangular blocky	Moderate	Weak fine to medium subangular blocky	Moderate	60	Moderate	Medium
Ida silt loam	11	3 or less	Weak fine granular	Moderately rapid	No subsoil or "B" horizon	---	3-10	Moderately rapid	Medium to rapid

EROSION:	Erosion class	0	1	2	3
	Percent of area	17	25	38	20

LAND CAPABILITY:	Class	I	II	III	IV
	Percent of area	0	29	50	21

GEOLOGY: A deep mantle of loess overlies glacial till which overlies bedrock. The bedrock is of the Pennsylvanian Age represented by the Missouri series. Its material is principally interbedded calcareous shales and limestones. The overlying glacial till has a depth of 75-125 ft. and probably consists of Kansan overlying Nebraskan. A gumbotil, 5-15 ft. thick, is present on the surface of both the Kansan and Nebraskan. The depth of the overlying Wisconsin loess varies from 10 ft. in the valleys up to 90 ft. on the ridges. The loess, light yellow to grey, has essentially no stratification and is very uniform for its entire depth. Development of the watershed topography is attributable entirely to the loess with any expression of the underlying till surface being masked even though the till has a mature erosional topography. The deep gullies in the valleys are generally incised slightly into the till. The loess has a moderate rate of percolation and the glacial till a very slow rate. A zone of saturation and seepage occurs at the loess-till interface causing a small base flow in most valleys. The first significant water bearing formation occurs within the bedrock at a depth of 150-200 ft. Source of data: "The Pre-Illinoian Pleistocene Geology of Iowa" by Kay and Apfel, Reports of the Iowa Geological Survey, Vol. 34, 1928. "The Illinoian and Post-Illinoian Pleistocene Geology of Iowa" by Kay and Graham, Reports of the Iowa Geological Survey, Vol. 38, 1943.

SURFACE DRAINAGE: Good; length of principal waterway 3500 ft.; common boundary with Watershed 2 for approximately 1850 ft. along northwest border.

CHARACTER OF FLOW: Perennial, continuous; fed by ground water discharge throughout the gully reach.

INSTRUMENTATION: Runoff: artificial control; broad-crested, 3:1, triangular, stainless steel, weir with two FW-1 water level recorders having 6 and 192 hr. gears. Laboratory rating checked with current meter and volumetric measurements. Precipitation: three recording rain gages, two having 12 hr. gears and one having 192 hr. gears.

WATERSHED CONDITIONS: Contour corn with a high level of fertility and good farming practices, 95 percent; gully and grass waterways, 5 percent.

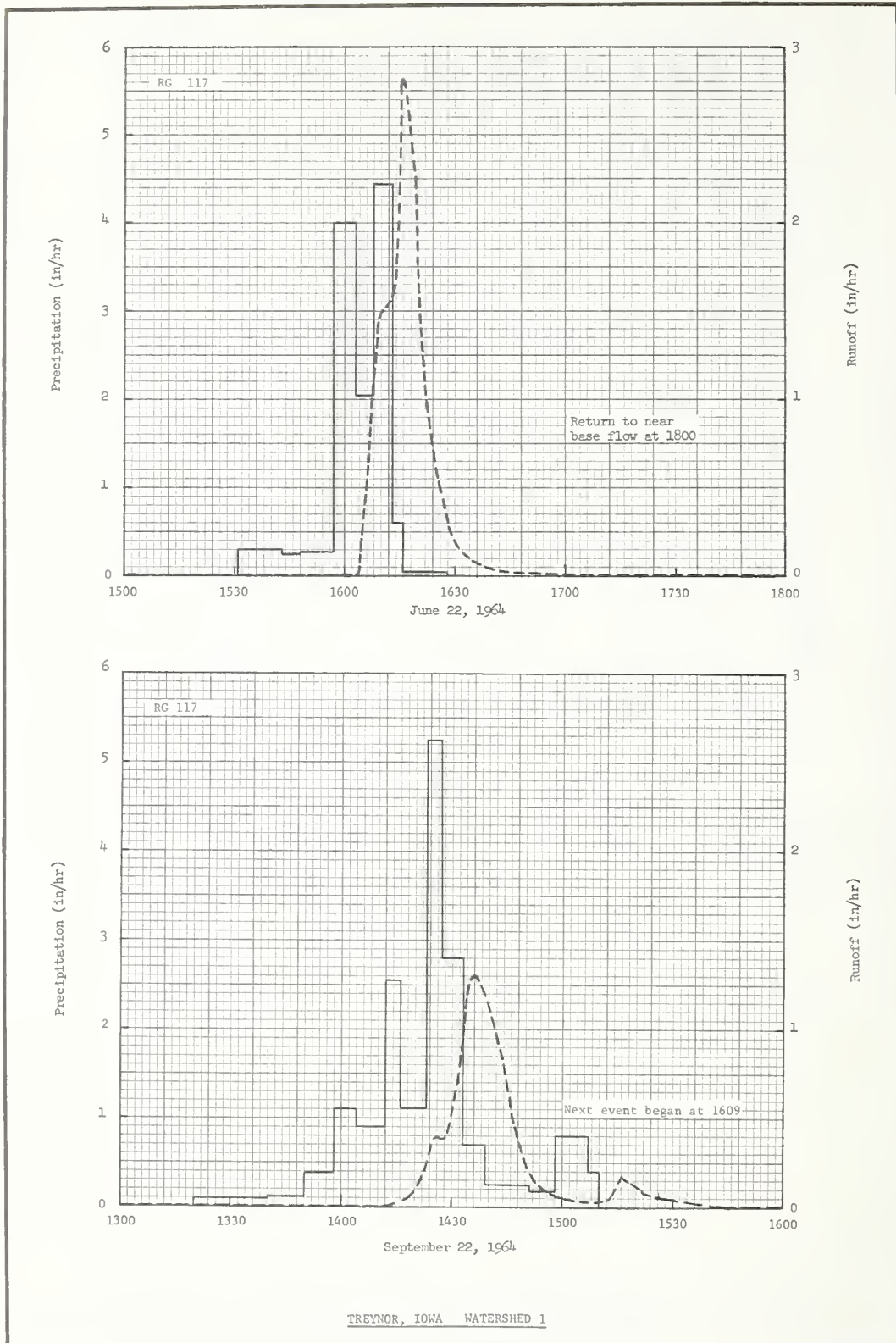
GENERALLY REPRESENTS: Cultivated land in contour corn located on the deep loessal soils of land resource area M-107, Iowa and Missouri Deep Loess Hills.

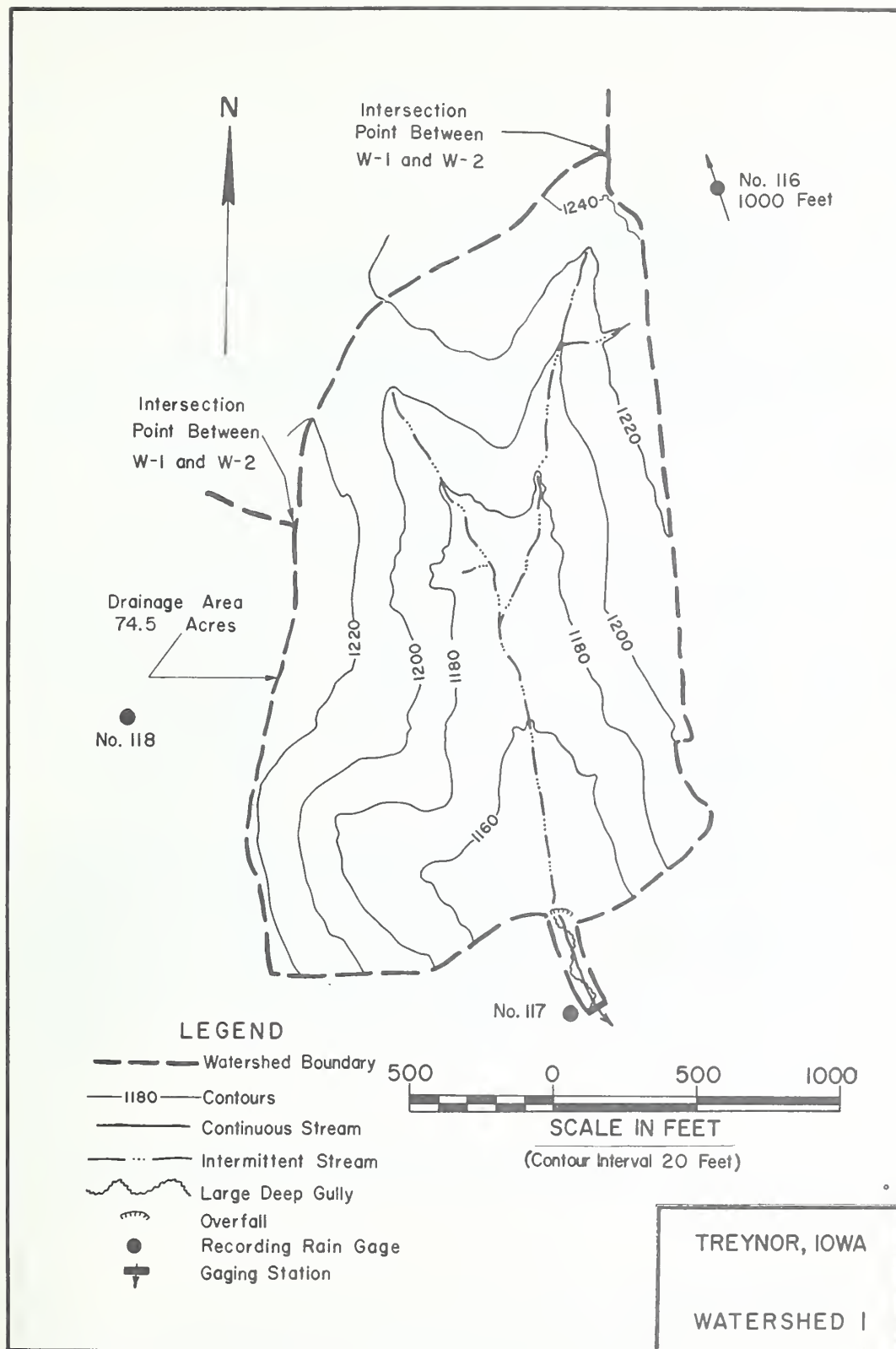
MONTHLY PRECIPITATION AND RUNOFF (inches)						TREYNOR, IOWA		WATERSHED 1								
						AREA—74.5 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.28 .14E	.27 .14	1.15 .14	5.25 .52	4.59 .81	7.25 2.06	3.88 .70	6.14 .79	4.34 .75	.68 .15	1.01 .14	.77 .15	35.61 6.49			
MEAN P 2/ 94 YR	.72	.90	1.41	2.61	3.71	4.62	3.69	3.48	3.01	2.04	1.19	.85	28.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-22	2.82	6-22	.57	6-22	.57	5-25	.60	5-25	.61	5-25	.61	5-25	.62	6-10	1.24
NOTES: Watershed conditions: 95% contoured corn; 5% gullies and grassed waterways. 1/ Precipitation from gage 117 before March 10 and after Nov. 12. Thiessen average of gages 116 and 117 for remainder of year. 2/ Mean P based on 94-yr (1871-1964) U. S. Weather Bureau record period at Omaha, Nebr.																
1964 SELECTED RUNOFF EVENTS						TREYNOR, IOWA		WATERSHED 1								
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1964																
2 RG 3/			6-22	RG	117		6-22	1600	.0013	.000						
5-23	.38	.0073			.00	.00		1602	.0048	.000						
5-24	.00	.0058			.06	.06		1603	.0145	.000						
5-25	1.11	.0229			.08	.08		1604	.0525	.001						
5-26	1.70	.5934			.12	.12		1605	.316	.004						
5-27	.00	.0080														
5-28	.00	.0071			1603	4.00		.52	1606	.518	.011					
5-29	.00	.0053			1608	2.04		.69	1607	.842	.022					
5-30	.00	.0045			1613	4.44		1.06	1608	1.13	.039					
5-31	.00	.0045			1616	.60		1.09	1609	1.35	.059					
6-1	.00	.0053		1628	.05	1.10	1610	1.50	.083							
6-2	.00	.0063					1612	1.54	.134							
6-3	.00	.0062					1613	1.58	.160							
6-4	.00	.0062		RG	116	1.16	1614	1.74	.187							
6-5	.00	.0062					1615	2.46	.222							
6-6	.00	.0063		2 RG	AVG 3/	1.12	1616	2.82	.266							
6-7	.04	.0072					1617	2.71	.312							
6-8	.68	.0144					1619	2.23	.395							
6-9	.00	.0075					1620	1.66	.427							
6-10	.30	.0101					1621	1.35	.452							
6-11	1.80	.3968					1623	.888	.489							
6-12	.00	.0080					1625	.557	.514							
6-13	.20	.0406					1627	.389	.529							
6-14	1.19	.4016					1630	.186	.544							
6-15	.32	.1337					1634	.102	.553							
6-16	.67	.2440					1638	.0624	.559							
6-17	.00	.0089					1640	.0396	.560							
6-18	.00	.0080					1646	.0219	.564							
6-19	.04	.0080					1652	.0145	.565							
6-20	.51	.0690					1656	.0137	.566							
6-21	.31	.0218					1702	.0100	.568							
6-22	4/ .09	5/ .0055					1705	.0066	.568							
							1708	.0048	.568							
							1733	.0033	.570							
							1800	6/ .0010	.571							
Watershed conditions: 95% - Contoured corn 12-18 in. tall, cultivated 10 days prior to event; 5% - gullies and grassed waterways.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 75.121. 3/ THIESSEN AVERAGE OF TWO RECORDING RAIN GAGES. 4/ RAINFALL FROM 0020 TO 0200. 5/ RUNOFF PRIOR TO 1600. 6/ RETURN TO NEAR BASE FLOW.																

1964 SELECTED RUNOFF EVENTS			TREYNOR, IOWA				WATERSHED 1			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 22, 1964										
8-23	2 RG 1/ .00	.0051	9-22	RG	117		9-22	1411	.0018	.000
8-24	.28	.0058		1320	.00	.00		1413	.0089	.000
8-25	.00	.0045		1340	.09	.03		1416	.0254	.001
8-26	.00	.0044		1350	.12	.05		1418	.0437	.002
8-27	1.10	.1194		1358	.38	.10		1422	.182	.010
8-28	.00	.0045		1404	1.10	.21		1424	.316	.018
8-29	1.09	.3132		1412	.90	.33		1426	.389	.030
8-30	.00	.0054		1416	2.55	.50		1427	.376	.036
8-31	.00	.0045		1423	1.12	.63		1429	.433	.050
9-1	.08	.0044		1427	5.25	.98		1432	.780	.080
9-2	.00	.0045		1433	2.80	1.26		1434	1.14	.112
9-3	.00	.0044		1439	.70	1.33		1436	1.30	.152
9-4	.00	.0044		1451	.25	1.38		1439	1.18	.214
9-5	.83	.0190		1458	.17	1.40		1442	.995	.269
9-6	.78	.1366		1507	.80	1.52		1444	.785	.299
9-7	.00	.0049		1510	.40	1.54		1446	.508	.320
9-8	.00	.0047						1449	.344	.342
9-9	.00	.0050						1451	.204	.351
9-10	.20	.0055						1453	.130	.356
9-11	.00	.0054						1457	.0737	.363
9-12	.00	.0052		RG	116	1.54		1500	.0514	.366
9-13	.00	.0051						1504	.0350	.369
9-14	.00	.0052		2 RG	AVG 1/	1.54		1505	.0297	.370
9-15	.00	.0055						1507	.0279	.370
9-16	.05	.0057						1513	.0324	.374
9-17	.21	.0064						1514	.0629	.374
9-18	.00	.0064						1515	.118	.376
9-19	.07	.0055						1516	.173	.378
9-20	.27	.0057						1518	.146	.384
9-21	.00	.0045						1521	.117	.390
9-22	.00	3/.0028						1522	.0869	.392
								1526	.0590	.397
								1529	.0307	.399
								1536	.0118	.401
								1543	.0053	.402
								1553	.0027	.403
								1602	.0012	.403
								1609	2/.0011	.404

Watershed conditions:
95% - Mature contour corn, good stand and weed control;
5% - gullies and grassed waterways.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 75.121. 1/ THIESSEN AVERAGE OF TWO RECORDING RAIN GAGES.
2/ BEGINNING OF NEXT EVENT. 3/ RUNOFF PRIOR TO 1411.





TREYNOR, IOWA WATERSHED 2

LOCATION: Pottawattamie County, Iowa; approximately 6 miles southwest of Treynor; Keg Creek, Missouri River Basin.

AREA: 82.8 acres.

SLOPES:	Slope—Percent	0-1	2-4	5-8	9-13
	Percent of area	0	29	24	47

SOILS: The soils of this watershed have developed from Wisconsin loess which overlies Kansan glacial till. The loess depths vary from 10 to 90 ft. Outcrops of glacial till are not evident. Geological erosion has removed much of the topsoil on the side-slopes, thus the topsoil depths are variable.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Marshall silty clay loam	36	10	Weak fine to medium subangular blocky	Moderate	Weak to moderate fine to medium subangular blocky	Moderate	30-60	Moderate to moderately rapid	Medium
Monona silt loam	24	6	Weak fine to medium granular	Moderately rapid	Weak fine subangular blocky	Moderately rapid	20-40	Moderately rapid	Medium
Ida silt loam	23	3 or less	Weak fine granular	Moderately rapid	No subsoil or "B" horizon	---	3-10	Moderately rapid	Medium to rapid
Napier silt loam (local alluvium)	17	30	Weak fine to medium subangular blocky	Moderate	Weak fine to medium subangular blocky	Moderate	60	Moderate	Medium

EROSION:	Erosion class	0	1	2	3
	Percent of area	0	58	30	12

LAND CAPABILITY:	Class	I	II	III
	Percent of area	0	28	72

GEOLOGY: A deep mantle of loess overlies glacial till which overlies bedrock. The bedrock is of the Pennsylvanian Age represented by the Missouri series. Its material is principally interbedded calcareous shales and limestones. The overlying glacial till has a depth of 75-125 ft. and probably consists of Kansan overlying Nebraskan. A gumbotil 5-15 ft. thick, is present on the surface of both the Kansan and Nebraskan. The depth of the overlying Wisconsin loess varies from 10 ft. in the valleys up to 90 ft. on the ridges. The loess, light yellow to grey, has essentially no stratification and is very uniform for its entire depth. Development of the watershed topography is attributable entirely to the loess with any expression of the underlying till surface being masked even though the till has a mature erosional topography. The deep gullies in the valleys are generally incised slightly into the till. The loess has a moderate rate of percolation and the glacial till a very slow rate. A zone of saturation and seepage occurs at the loess-till interface causing a small base flow in most valleys. The first significant water bearing formation occurs within the bedrock at a depth of 150-200 ft. Source of data: "The Pre-Illinoian Pleistocene Geology of Iowa" by Kay and Apfel, Reports of the Iowa Geological Survey, Vol. 34, 1928. "The Illinoian and Post-Illinoian Pleistocene Geology of Iowa" by Kay and Graham, Reports of the Iowa Geological Survey, Vol. 38, 1943.

SURFACE DRAINAGE: Good; length of principal waterway 3000 ft.; common boundary with Watershed 1 for approximately 1850 ft. along southeast border.

CHARACTER OF FLOW: Perennial, continuous; fed by ground water discharge throughout the gully reach.

INSTRUMENTATION: Runoff: artificial control; broad-crested, 2:1, triangular, stainless steel, weir with two FW-1 water level recorders having 6 and 192 hr. gears. Laboratory rating checked with current meter and volumetric measurements. Precipitation: three recording rain gages, two having 12 hr. gears and one having 192 hr. gears.

WATERSHED CONDITIONS: Contour corn with a high level of fertility and good farming practices, 95 percent; gully and grass waterways, 5 percent.

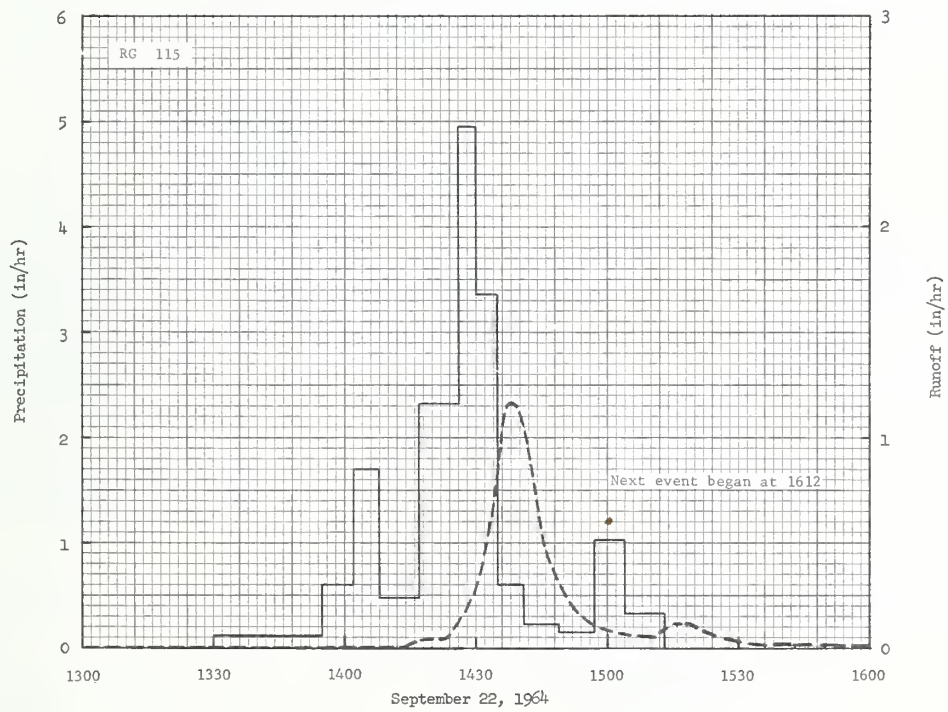
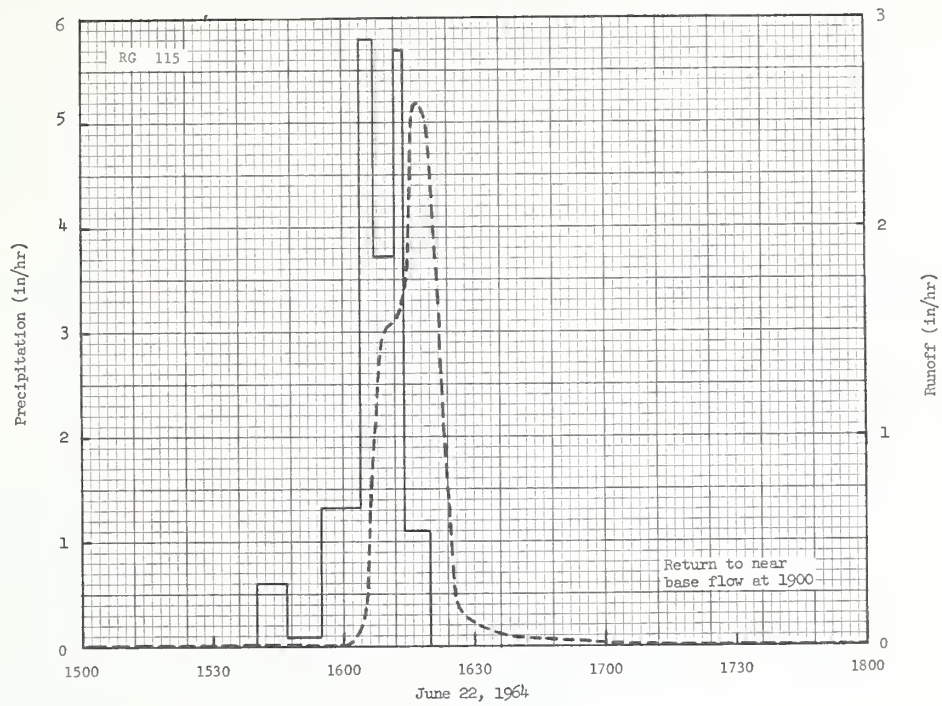
GENERALLY REPRESENTS: Cultivated land in contour corn located on the deep loessal soils of land resource area M-107, Iowa and Missouri Deep Loess Hills.

MONTHLY PRECIPITATION AND RUNOFF (inches)						TREYNOR, IOWA				WATERSHED 2						
						AREA—82.8 ACRES										
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 P 1/ Q	.28 .16E	.27 .17	1.18 .20	5.18 .44	4.61 .94	7.30 2.03	3.72 .41	5.89 .64	4.28 .66	.67 .15	1.01 .15	.77 .22	35.16 6.17			
MEAN P 2/ 94 YR	.72	.90	1.41	2.61	3.71	4.62	3.69	3.48	3.01	2.04	1.19	.85	28.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-22	2.59	6-22	.57	6-22	.58	5-25	.74	5-25	.75	5-25	.75	5-24	.76	6-11	1.19
NOTES: Watershed conditions: 95% contoured corn; 5% gullies and grassed waterways. 1/ Precipitation from gage 117 before March 10 and after Nov. 12. Thiessen average of gages 115 and 116 for remainder of year. 2/ Mean P based on 94-yr (1871-1964) U. S. Weather Bureau record period at Omaha, Nebr.																
1964 SELECTED RUNOFF EVENTS						TREYNOR, IOWA				WATERSHED 2						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1964																
5-23	2 RG 3/ .37	.0105	6-22	RG	115		6-22	1600	.0069	.000						
5-24	.00	.0060		1540	.00	.00		1602	.0220	.000						
5-25	1.23	.1137		1547	.60	.07		1604	.0878	.002						
5-26	1.65	.0461		1555	.08	.08		1605	.194	.005						
5-27	.00	.0048		1604	1.33	.28		1606	.657	.012						
5-28	.00	.0049		1607	5.80	.57		1608	1.15	.042						
5-29	.00	.0049		1612	3.72	.88		1610	1.52	.086						
5-30	.00	.0049		1614	5.70	1.07		1613	1.59	.164						
5-31	.00	.0049		1620	1.10	1.18		1615	1.84	.221						
6-1	.00	.0049						1616	2.46	.257						
6-2	.00	.0049		RG	116	1.16		1617	2.59	.299						
6-3	.00	.0049						1619	2.51	.384						
6-4	.00	.0048		2 RG	AVG 3/	1.17		1621	1.98	.459						
6-5	.00	.0049						1623	1.10	.510						
6-6	.00	.0049						1625	.354	.535						
6-7	.04	.0050						1626	.194	.539						
6-8	.68	.0182						1628	.138	.545						
6-9	.00	.0048						1630	.110	.549						
6-10	.30	.0057						1633	.0821	.554						
6-11	1.86	.4229						1636	.0621	.557						
6-12	.00	.0098						1640	.0449	.561						
6-13	.21	.0190						1647	.0341	.566						
6-14	1.13	.2756						1650	.0318	.567						
6-15	.33	.1272						1655	.0258	.570						
6-16	.73	.3031						1658	.0203	.571						
6-17	.00	.0180						1701	.0137	.572						
6-18	.00	.0135						1707	.0092	.573						
6-19	.03	.0135						1715	.0061	.574						
6-20	.48	.0579						1740	.0054	.576						
6-21	.26	.0310						1800	.0030	.578						
6-22	4/ .09	5/ .0083						1900	6/ .0011	.580						
Watershed conditions: 95% - Contoured corn 12-18 in. tall, cultivated 10 days prior to event; 5% - gullies and grassed waterways																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 83.490. 3/ THIESSEN AVERAGE OF TWO RECORDING RAIN GAGES. 4/ RAINFALL FROM 0020 TO 0200. 5/ RUNOFF PRIOR TO 1600. 6/ RETURN TO NEAR BASE FLOW.																

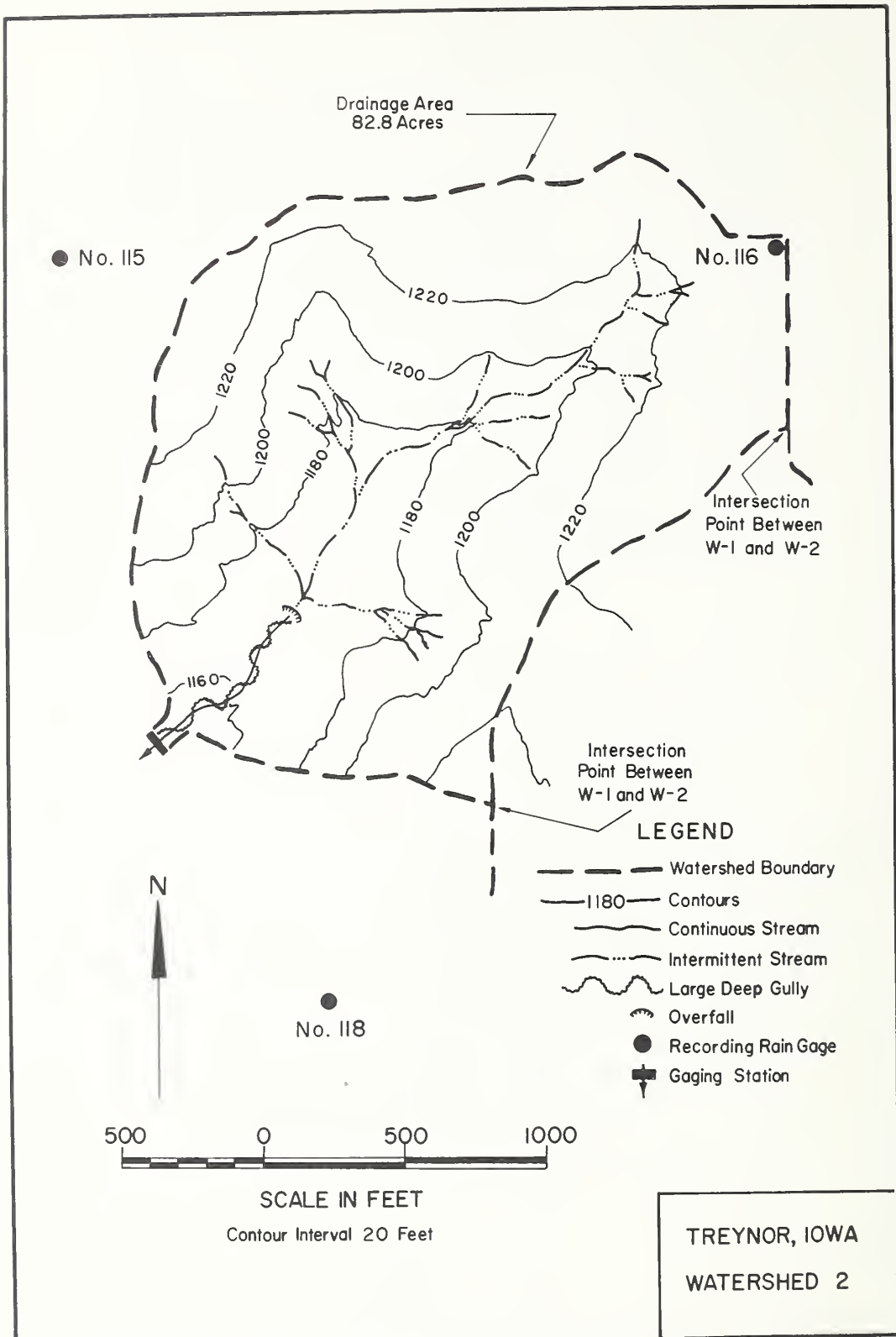
1964 SELECTED RUNOFF EVENTS			TREYNOR, IOWA				WATERSHED 2			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
Event of September 22, 1964										
8-23	2 RG 1/ .00	.0058	9-22	RG	115		9-22	1414	.0032	.000
8-24	.25	.0068		1330	.00	.00		1415	.0212	.000
8-25	.00	.0066		1355	.12	.05		1418	.0282	.001
8-26	.00	.0058		1402	.60	.12		1420	.0406	.003
8-27	1.03	.0847		1408	1.70	.29		1424	.0521	.006
8-28	.00	.0065		1417	.47	.36		1425	.0378	.007
8-29	1.07	.2610		1426	2.33	.71		1426	.120	.009
8-30	.00	.0068		1430	4.95	1.04		1427	.158	.011
8-31	.00	.0059		1435	3.36	1.32		1428	.194	.014
9-1	.06	.0061		1441	.60	1.38		1430	.268	.022
9-2	.00	.0049		1449	.23	1.41		1431	.354	.027
9-3	.00	.0049		1457	.15	1.43		1432	.445	.033
9-4	.00	.0049		1504	1.03	1.55		1433	.563	.042
9-5	.80	.0181		1513	.33	1.60		1434	.686	.052
9-6	.77	.1140						1435	.840	.065
9-7	.00	.0055		RG	116	1.54		1436	1.05	.081
9-8	.00	.0049						1437	1.15	.099
9-9	.00	.0050		2 RG	AVG 1/	1.57		1438	1.17	.118
9-10	.18	.0062						1439	1.13	.137
9-11	.00	.0056						1441	1.05	.174
9-12	.00	.0049						1442	.873	.190
9-13	.00	.0048						1444	.715	.216
9-14	.00	.0049						1445	.513	.226
9-15	.00	.0050						1447	.393	.242
9-16	.05	.0064						1450	.276	.258
9-17	.21	.0072						1452	.194	.266
9-18	.00	.0056						1453	.163	.269
9-19	.08	.0047						1455	.136	.274
9-20	.26	.0069						1459	.0878	.282
9-21	.00	.0049						1508	.0554	.292
9-22	.00	2/.0035						1511	.0537	.295
								1513	.0802	.297
								1515	.106	.300
								1516	.106	.302
								1517	.108	.304
								1518	.101	.306
								1522	.0839	.312
								1525	.0638	.316
								1530	.0449	.320
								1535	.0258	.323
								1543	.0108	.326
								1550	.0047	.326
								1558	.0027	.327
								1605	.0040	.327
								1606	.0030	.327
								1607	.0035	.327
								1608	.0035	.327
								1609	.0032	.328
								1612	3/ .0030	.328
Watershed conditions: 95% - Mature contour corn, good stand and weed control; 5% - gullies and grassed waterways.										

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 83.490. 1/ THIESSEN AVERAGE OF TWO RECORDING RAIN GAGES.
2/ RUNOFF PRIOR TO 1414. 3/ BEGINNING OF NEXT EVENT.

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 83.490. 1/ THIESSEN AVERAGE OF TWO RECORDING RAIN GAGES.
 2/ RUNOFF PRIOR TO 1414. 3/ BEGINNING OF NEXT EVENT.



TREYNOR, IOWA WATERSHED 2



TREYNOR, IOWA WATERSHED 3

LOCATION: Pottawattamie County, Iowa; approximately 3 miles southwest of Treynor; Silver Creek, West Nishnabotna River, Missouri River Basin.

AREA: 107 acres.

SLOPES:	Slope--Percent	0-1	2-4	5-8	9-13
	Percent of area	0	41	2	57

SOILS: The soils of this watershed have developed from Wisconsin loess which overlies Kansan glacial till. The loess depths vary from 10 to 90 ft. Outcrops of glacial till are not evident. Geological erosion has removed much of the topsoil on the side-slopes, thus the topsoil depths are variable.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Monona silt loam	50	6	Weak fine to medium granular	Moderately rapid	Weak fine subangular blocky	Moderately rapid	20-40	Moderately rapid	Medium
Marshall silty clay loam	22	10	Weak fine to medium subangular blocky	Moderate	Weak to moderate fine to medium subangular blocky	Moderate	30-60	Moderate to moderately rapid	Medium
Napier silt loam (local alluvium)	22	30	Weak fine to medium subangular blocky	Moderate	Weak fine to medium subangular blocky	Moderate	60	Moderate	Medium
Ida silt loam	6	3 or less	Weak fine granular	Moderately rapid	No subsoil or "B" horizon	---	3-10	Moderately rapid	Medium to rapid

EROSION:	Erosion class	0	1	2	3
	Percent of area	23	25	49	3

LAND CAPABILITY:	Class	I	II	III
	Percent of area	0	32	68

GEOLOGY: A deep mantle of loess overlies glacial till which overlies bedrock. The bedrock is of the Pennsylvanian age represented by the Missouri series. Its material is principally interbedded calcareous shales and limestones. The overlying glacial till has a depth of 75-125 ft. and probably consists of Kansan overlying Nebraskan. A gumbotil, 5-15 ft. thick, is present on the surface of both the Kansan and Nebraskan. The depth of the overlying Wisconsin loess varies from 10 ft. in the valleys up to 90 ft. on the ridges. The loess, light yellow to grey, has essentially no stratification and is very uniform for the entire depth. Development of the watershed topography is attributable entirely to the loess with any expression of the underlying till surface being masked even though the till has a mature erosional topography. The deep gullies in the valleys are generally incised slightly into the till. The loess has a moderate rate of percolation and the glacial till a very slow rate. A zone of saturation and seepage occurs at the loess-till interface causing a small base flow in most valleys. The first significant water bearing formation occurs within the bedrock at a depth of 150-200 ft. Source of data: "The Pre-Illinoian Pleistocene Geology of Iowa" by Kay and Apfel, Reports of the Iowa Geological Survey, Vol. 34, 1928. "The Illinoian and Post-Illinoian Pleistocene Geology of Iowa" by Kay and Graham, Reports of the Iowa Geological Survey, Vol. 38, 1943.

SURFACE DRAINAGE: Good; length of principal waterway 3100 ft.; common boundary with Watershed 4 for approximately 2050 ft. along northwest border.

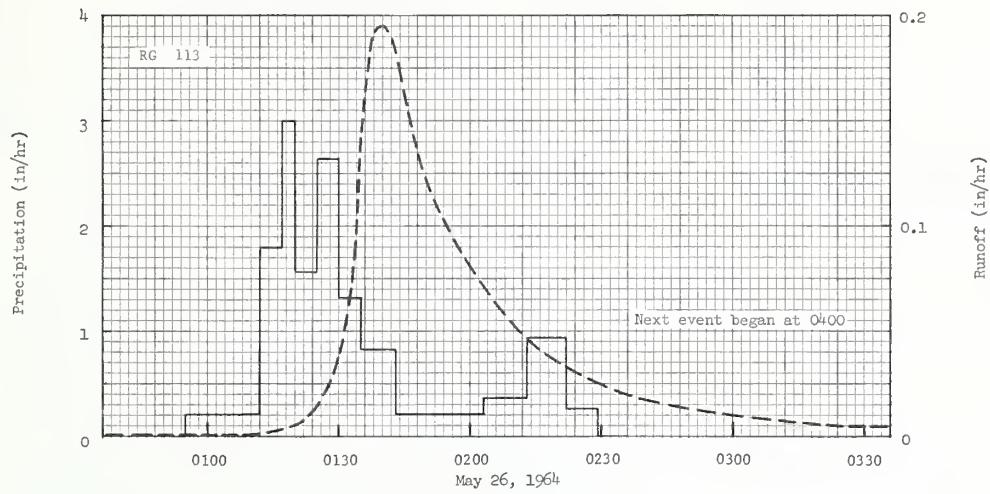
CHARACTER OF FLOW: Perennial, continuous; fed by ground water discharge throughout the gully reach.

INSTRUMENTATION: Runoff: artificial control; broad-crested, 2:1, triangular, stainless steel, weir with two FW-1 water level recorders having 6 and 192 hr. gears. Laboratory rating checked with current meter and volumetric measurements. Precipitation: three recording rain gages, two having 12 hr. gears and one having 192 hr. gears.

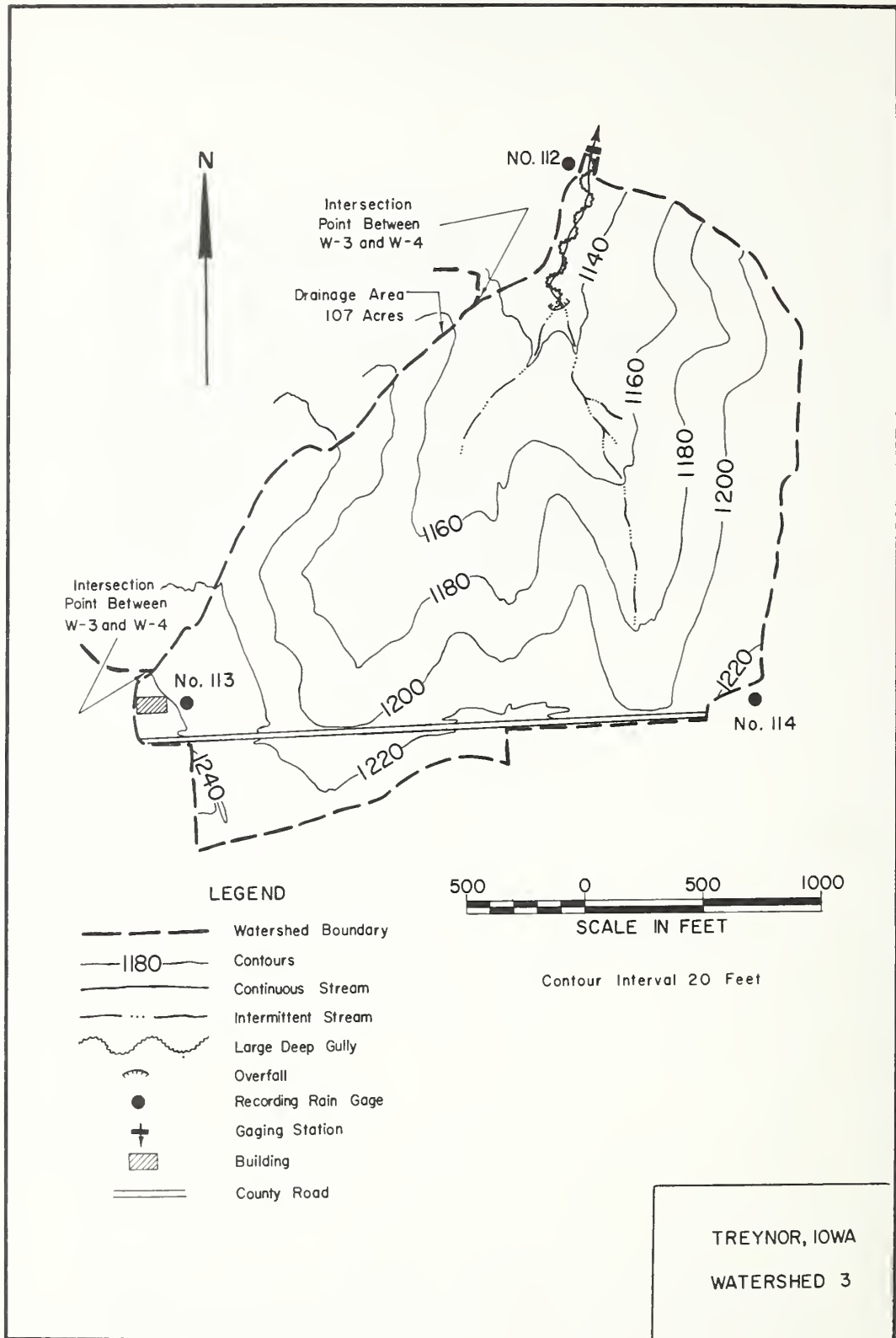
WATERSHED CONDITIONS: Pasture with controlled grazing, 96 percent; gravel roads and farmstead, 4 percent.

GENERALLY REPRESENTS: Land in pasture located on the deep loessal soils of land resource area M-107, Iowa and Missouri Deep Loess Hills.

MONTHLY PRECIPITATION AND RUNOFF (inches)						TREYNOR, IOWA				WATERSHED 3														
						AREA—107 ACRES																		
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL											
1964 P 1/ Q	.31 .09	.20 .09	1.09 .11	5.05 .19	5.12 .40	8.11 .50	3.42 .46	5.03 .22	2.95 .27	.65 .18	.86 .14	.70 .13	33.49 2.78											
MEAN P 2/ 94 YR	.72	.90	1.41	2.61	3.71	4.62	3.69	3.48	3.01	2.04	1.19	.85	28.23											
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																								
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL																					
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS									
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME								
1964	5-26	.19	5-26	.09	5-26	.10	5-26	.12	5-25	.12	5-25	.13	5-24	.14	6-16	.26								
Notes: Watershed conditions: 96% permanent pasture with controlled grazing; 4% gravel roads and farmstead. 1/ Precipitation from gage 113 before March 10. Thiessen average of gages 112, 113 and 114 for March 10-Sept. 1 and of gages 112 and 113 for remainder of year. 2/ Mean P based on 94-yr (1871-1964) U.S. Weather Bureau record period at Omaha, Nebr.																								
1964 SELECTED RUNOFF EVENT						TREYNOR, IOWA				WATERSHED 3														
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF																	
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)														
Event of May 26, 1964																								
4-26	3 RG 3/ 1.61	.0333	5-26	RG	113		5-26	0108	.0004	.0000														
4-27	.17	.0092		0055	.00	.00		0120	.0047	.0006														
4-28	.00	.0069		0112	.21	.06		0130	.0390	.0042														
4-29	.00	.0065		0117	1.80	.21		0135	.144	.0118														
4-30	.00	.0067		0120	3.00	.36		0140	.195	.0260														
5-1	.00	.0067		0125	1.56	.49		0150	.120	.0522														
5-2	.00	.0067		0130	2.64	.71		0200	.0808	.0690														
5-3	.00	.0069		0135	1.32	.82		0217	.0390	.0860														
5-4	.00	.0074		0143	.83	.93		0230	.0244	.0929														
5-5	.58	.0094		0203	.21	1.00		0250	.0134	.0992														
5-6	.00	.0091		0213	.36	1.06		0325	.0054	.1047														
5-7	.33	.0090		0222	.94	1.20		0400	.0051	.1077														
5-8	.00	.0088		0229	.26	1.23																		
5-9	.09	.0082																						
5-10	.00	.0095																						
5-11	.00	.0101	RG	112	1.26																			
5-12	.26	.0109	RG	114	1.14																			
5-13	.00	.0109																						
5-14	.00	.0107	3 RG	AVG 3/	1.19																			
5-15	.13	.0107																						
5-16	.00	.0105																						
5-17	.00	.0098																						
5-18	.00	.0095																						
5-19	.00	.0097																						
5-20	.00	.0095																						
5-21	.00	.0092																						
5-22	.30	.0093																						
5-23	.26	.0098																						
5-24	.00	.0103																						
5-25	5/ 1.25	.0101																						
5-26	5/ .30	6/ .0004																						
Watershed conditions: 96% - Good pasture, mostly 3-6 in. tall; 4% - gravel roads and farmstead.																								
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 107.89. 3/ THIESSEN AVERAGE OF THREE RECORDING RAIN GAGES. 4/ BEGINNING OF NEXT EVENT. 5/ CONTINUOUS RAINFALL FROM MAY 25, 2220 TO MAY 26, 0055. 6/ RUNOFF PRIOR TO 0108.																								



TREYNOR, IOWA WATERSHED 3



TREYNOR, IOWA WATERSHED 4

LOCATION: Pottawattamie County, Iowa; approximately 3 miles southwest of Treynor; Silver Creek, West Nishnabotna River, Missouri River Basin.

AREA: 150 acres.

SLOPES:	Slope—Percent	0-1	2-4	5-8	9-13
	Percent of area	0	32	19	49

SOILS: The soils of this watershed have developed from Wisconsin loess which overlies Kansan glacial till. The loess depths vary from 10 to 90 ft. Outcrops of glacial till are not evident. Geological erosion has removed much of the topsoil on the side-slopes, thus the topsoil depths are variable.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Monona silt loam	48	6	Weak fine to medium granular	Moderately rapid	Weak fine subangular blocky	Moderately rapid	20-40	Moderately rapid	Medium
Marshall silty clay loam	23	10	Weak fine to medium subangular blocky	Moderate	Weak to moderate fine to medium subangular blocky	Moderate	30-60	Moderate to moderately rapid	Medium
Napier silt loam (local alluvium)	23	30	Weak fine to medium subangular blocky	Moderate	Weak fine to medium subangular blocky	Moderate	60	Moderate	Medium
Ida silt loam	6	3 or less	Weak fine granular	Moderately rapid	No subsoil or "B" horizon	---	3-10	Moderately rapid	Medium to rapid

EROSION:	Erosion class	0	1	2	3
	Percent of area	22	28	41	9

LAND CAPABILITY:	Class	I	II	III
	Percent of area	0	31	69

GEOLOGY: A deep mantle of loess overlies glacial till which overlies bedrock. The bedrock is of the Pennsylvanian age represented by the Missouri series. Its material is principally interbedded calcareous shales and limestones. The overlying glacial till has a depth of 75-125 ft. and probably consists of Kansan overlying Nebraskan. A gumbotil, 5-15 ft. thick, is present on the surface of both the Kansan and Nebraskan. The depth of the overlying Wisconsin loess varies from 10 ft. in the valleys up to 90 ft. on the ridges. The loess, light yellow to grey, has essentially no stratification and is very uniform for the entire depth. Development of the watershed topography is attributable entirely to the loess with any expression of the underlying till surface being masked even though the till has a mature erosional topography. The deep gullies in the valleys are generally incised slightly into the till. The loess has a moderate rate of percolation and the glacial till a very slow rate. A zone of saturation and seepage occurs at the loess-till interface causing a small base flow in most valleys. The first significant water bearing formation occurs within the bedrock at a depth of 150-200 ft. Source of data: "The Pre-Illinoian Pleistocene Geology of Iowa" by Kay and Apfel, Reports of the Iowa Geological Survey, Vol. 34, 1928. "The Illinoian and Post-Illinoian Pleistocene Geology of Iowa" by Kay and Graham, Reports of the Iowa Geological Survey, Vol. 38, 1943.

SURFACE DRAINAGE: 92 percent of the watershed area is above level terraces having a storage capacity of 2 in. of surface runoff. Length of principal waterway before terracing, 4200 ft.; after terracing, 2380 ft.; common boundary with Watershed 3 for approximately 2050 ft. along southeast border.

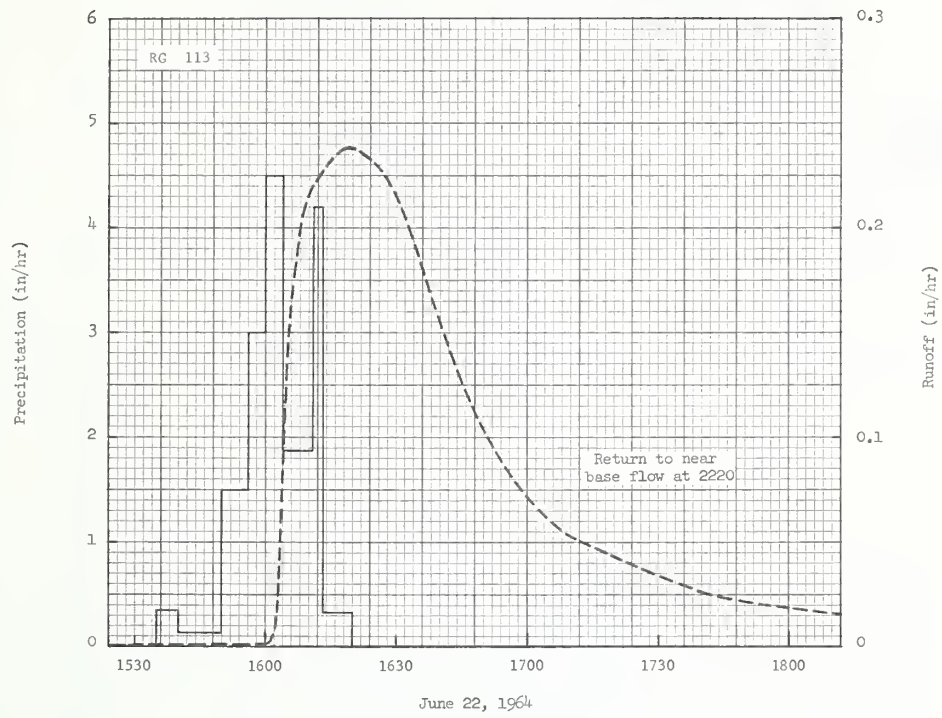
CHARACTER OF FLOW: Perennial, continuous; fed by ground water discharge throughout the gully reach.

INSTRUMENTATION: Runoff: Artificial control, broad-crested, 2:1, triangular, stainless steel weir with two PW-1 water level recorders having 6 and 192 hr. gears. Laboratory rating checked with current meter and volumetric measurements. Precipitation: Three recording rain gages having 12 hr. gears.

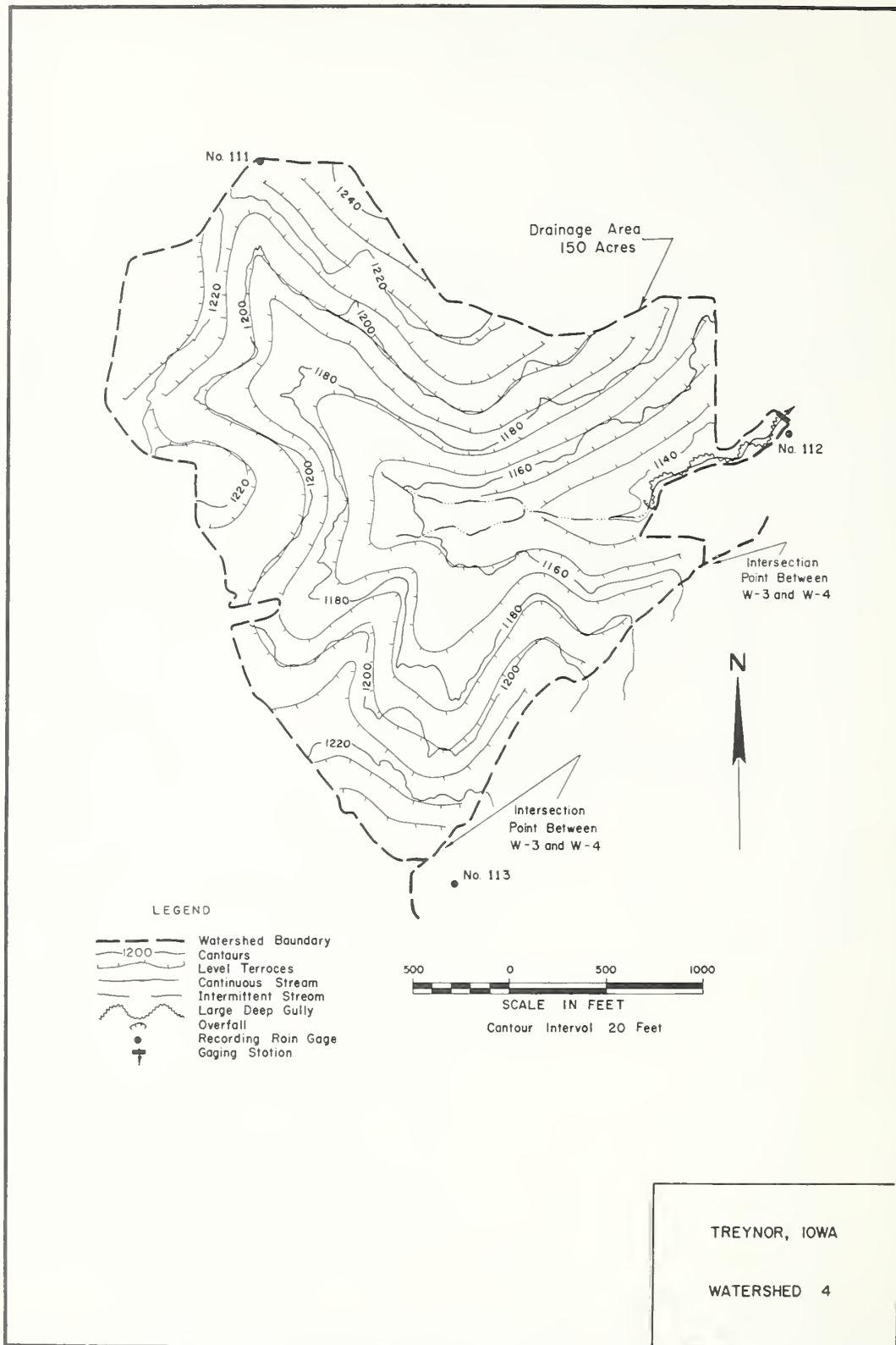
WATERSHED CONDITIONS: Contour corn on grassed back-slope bench terraces and bottom area, 89 percent; grassed, terrace back-slopes, 10 percent; gully, 1 percent. Entire watershed contains all recommended terraces.

GENERALLY REPRESENTS: Cultivated, bench terraced land on the deep loessal soils of land resource area M-107, Iowa and Missouri Deep Loess Hills.

MONTHLY PRECIPITATION AND RUNOFF (inches)						TREYNOR, IOWA				WATERSHED 4						
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1964 $\frac{1}{Q}$	.31 .14E	.20 .14E	1.06 .17	4.95 .21	5.12 .59	8.30 1.39	3.73 1.02	4.84 .65	4.07 .63	.66 .56	.86 .52	.70 .39	34.80 6.41		
MEAN P $\frac{2}{94}$ YR	.72	.90	1.41	2.61	3.71	4.62	3.69	3.48	3.01	2.04	1.19	.85	28.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1964	6-22	.24	6-22	.17	6-22	.20	6-22	.22	6-22	.24	6-22	.26	6-22	.32	6-16	.79
Notes: Watershed conditions: 89% contour corn on terraced and bottom areas; 10% grassed, terrace back-slopes; 1% gully. Terrace construction began in March and was completed in early May. Some overtopped and were repaired in late May. Overtopping again occurred in mid-June with no further repairs made until early Spring 1965. Although breaks were present, the terrace system remained approximately 70-80% effective. $\frac{1}{Q}$ Precipitation from gage 113 before March 10 and after Nov. 12. Thiessen average of gages 111, 112 and 113 for remainder of year. $\frac{2}{94}$ Mean P based on 94-yr (1871-1964) U.S. Weather Bureau record period at Omaha, Nebr.																
1964 SELECTED RUNOFF EVENT						TREYNOR, IOWA				WATERSHED 4						
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 22, 1964																
5-23	3 RG $\frac{3}{.23}$	.0120	6-22	RG	113		6-22	1600	.0017	.0000					
5-24	.00	.0116		1535	.00	.00		1602	.0060	.0001						
5-25	1.20	.0127		1540	.36	.03		1603	.0280	.0004						
5-26	2.09	.2187		1550	.12	.05		1604	.104	.0015						
5-27	.00	.0166		1556	1.50	.20		1606	.169	.0060						
5-28	.00	.0167		1600	3.00	.40		1609	.214	.0156						
5-29	.00	.0167		1604	4.50	.70		1612	.222	.0265						
5-30	.00	.0166		1611	1.88	.92		1618	.238	.0495						
5-31	.00	.0167		1613	4.20	1.06		1625	.232	.0769						
6-1	.00	.0167		1620	.34	1.10		1630	.217	.0955						
6-2	.00	.0166		RG	111	1.00		1634	.194	.1093						
6-3	.00	.0167		RG	112	.93		1640	.154	.1267						
6-4	.00	.0167						1650	.104	.1482						
6-5	.00	.0166		3 RG	AVG $\frac{3}{}$	1.03		1700	.0711	.1628						
6-6	.00	.0167						1710	.0534	.1732						
6-7	.04	.0167						1720	.0428	.1812						
6-8	.89	.0158						1740	.0265	.1928						
6-9	.00	.0149						1800	.0186	.2003						
6-10	.44	.0159						1840	.0095	.2096						
6-11	1.83	.0381						1920	.0051	.2145						
6-12	.00	.0184						2000	.0028	.2172						
6-13	.19	.0199						2220	$\frac{4}{.0023}$	.2231					
6-14	.91	.0551														
6-15	.46	.0365														
6-16	1.40	.1799														
6-17	.00	.0770														
6-18	.00	.0400														
6-19	.22	.0400														
6-20	.50	.0708														
6-21	.37	.0400														
6-22	$\frac{5}{.02}$	$\frac{6}{.0267}$														
Watershed conditions: 89%, corn 1-2 ft. tall on terraces which contained some breaks and some ponded water prior to this event. Some overtopping occurred during this event. Terrace system probably remained 70-80% effective. 10% grassed, terrace back-slopes. 1%, gully.																
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 151.25. $\frac{3}{}$ THIESSEN AVERAGE OF THREE RECORDING RAIN GAGES. $\frac{4}{}$ RETURN TO NEAR BASE FLOW. $\frac{5}{}$ RAINFALL PRIOR TO 0043. $\frac{6}{}$ RUNOFF PRIOR TO 1600.																



TREYNOR, IOWA WATERSHED 4



TREYNOR, IOWA WATERSHED 5

LOCATION: Pottawattamie County, Iowa; approximately 9 miles southeast of Treynor and 3 miles southwest of Macedonia; West Nishnabotna River, Missouri River Basin.

AREA: 389 acres.

SLOPES:	Slope—Percent	0-1	2-4	5-8	9-13
	Percent of area	0	36	12	52

SOILS: The soils of this watershed have developed from Wisconsin loess which overlies Kansan glacial till. The loess depths vary from 10 to 50 ft. Outcrops of glacial till are not evident. Geological erosion has removed much of the topsoil on the side-slopes, thus the topsoil depths are variable.

Type	Percent of area	Topsoil			Subsoil		Substratum		Internal drainage
		Average depth (in.)	Structure	Permeability	Structure	Permeability	Average depth to (in.)	Permeability	
Marshall silty clay loam	74	23	Weak fine to medium subangular blocky	Moderate	Weak to moderate fine to medium subangular blocky	Moderate	30-60	Moderate to moderately rapid	Medium
Judson silt loam (local alluvium)	23	30	Weak very fine subangular blocky	Moderate	Moderate fine subangular blocky	Moderate	60	Moderate to moderately slow	Medium
Monona silt loam	3	6	Weak fine to medium granular	Moderately rapid	Weak fine subangular blocky	Moderately rapid	20-40	Moderately rapid	Medium

EROSION:	Erosion class	1	2
	Percent of area	41	59

LAND CAPABILITY:	Class	I	II	III
	Percent of area	0	36	64

GEOLOGY: A deep mantle of loess overlies glacial till which overlies bedrock. The bedrock is of the Pennsylvanian age represented by the Missouri series. Its material is principally interbedded calcareous shales and limestones. The overlying glacial till has a depth of 75-125 ft. and probably consists of Kansan overlying Nebraskan. A gumbotil, 5-15 ft. thick, is present on the surface of both the Kansan and Nebraskan. The depth of the overlying Wisconsin loess varies from 10 ft. in the valleys up to 50 ft. on the ridges. The loess, light yellow to grey, has essentially no stratification and is very uniform for its entire depth. Development of the watershed topography is partially attributable to the loess and partially to the mature erosional topography of the underlying till. The loess has a moderate rate of percolation and the glacial till a very slow rate. A zone of saturation and seepage occurs at the loess-till interface causing a small base flow in most valleys. The first significant water bearing formation occurs within the bedrock at a depth of 150-200 ft. Source of data: "The Pre-Illinoian Pleistocene Geology of Iowa" by Kay and Apfel, Reports of the Iowa Geological Survey, Vol. 34, 1928. "The Illinoian and Post-Illinoian Pleistocene Geology of Iowa" by Kay and Craham, Reports of the Iowa Geological Survey, Vol. 38, 1943.

SURFACE DRAINAGE: 85 percent of the watershed is above level terraces having a storage capacity of 2 in. of surface runoff. Length of principal waterway before terracing, 7100 ft.; after terracing, 6200 ft.

CHARACTER OF FLOW: Perennial; continuous.

INSTRUMENTATION: Runoff: Artificial control; 16 in. broad-crested, 5:1, triangular, concrete weir with two FW-1 water level recorders having 6 and 192 hr. gears. Laboratory rating checked with current meter and volumetric measurements. Precipitation: Eight recording rain gages, seven having 12 hr. gears, one having 192 hr. gears.

WATERSHED CONDITIONS: Level terraced with greater than 95 percent of those recommended. Terrace capacities are about 2 inches of runoff from the contributing area. Contour farmed with mixed cropping, good tillage practices, and ample fertilizer.

Year	Location of area	Percent of Watershed in:					
		Corn	Beans	Small grain	Alfalfa or clover	Pasture	Roads and farmstead
1963	Above terraces	32	12	7	5	26	3
	Below terraces	2	--	1	1	10	1
1964	Above terraces	27	20	9	-	26	3
	Below terraces	3	1	-	-	10	1

GENERALLY REPRESENTS: Cultivated, level terraced land on the deep loessal soils of land resource area M-107, Iowa and Missouri Deep Loess Hills.

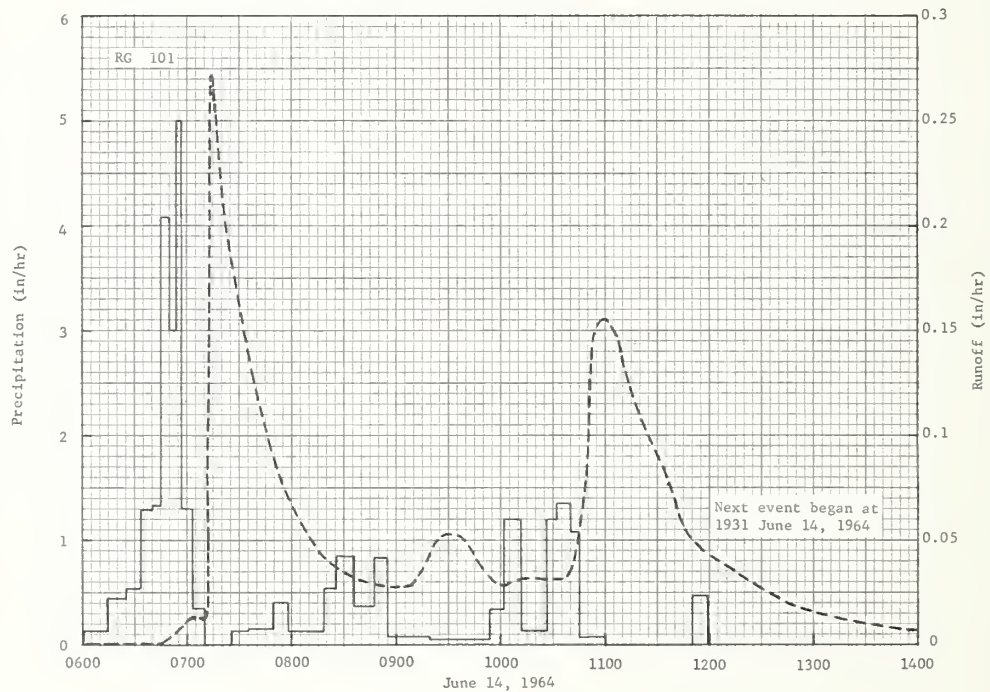
MONTHLY PRECIPITATION AND RUNOFF (inches)						TREYNOR, IOWA		WATERSHED 5 AREA—389 ACRES								
MONTH YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL			
1963 P1/ Q	.34E .13E	.33 .32	2.32 1.20	3.12 .27	1.68 .24	2.01 .15	2.45 .10	6.67 .14	5.27 .25	.51 .13	.58 .11	.84 .11	26.12 3.15			
1964 P2/ Q	.36 .20	.21 .08	1.55 .07	5.37 .27	4.37 .32	8.00 1.14	3.35 .44	4.92 .33	4.31 .45	.82 .26	1.50 .21	1.08 .18	35.84 3.95			
STA AV P (63-64) Q	.35E .16E	.27 .20	1.94 .64	4.24 .27	3.02 .28	5.00 .64	2.90 .27	5.80 .24	4.79 .35	.66 .20	1.04 .16	.96 .14	30.97 3.55			
MEAN P 3/ 94 YR	.72	.90	1.41	2.61	3.71	4.62	3.69	3.48	3.01	2.04	1.19	.85	28.23			
ANNUAL MAXIMUM DISCHARGES (inches per hour) AND ANNUAL MAXIMUM VOLUMES OF RUNOFF (inches) FOR SELECTED TIME INTERVALS																
YEAR	MAXIMUM DISCHARGE		MAXIMUM VOLUME FOR SELECTED TIME INTERVAL													
			1 HOUR		2 HOURS		6 HOURS		12 HOURS		1 DAY		2 DAYS		8 DAYS	
	DATE	RATE	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME	DATE	VOLUME
1963	3-4	.06	3-4	.05	3-4	.08	3-8	.13	3-11	.17	3-11	.20	3-9	.24	3-4	.70
1964	6-14	.27	6-14	.13	6-14	.16	6-14	.38	6-14	.40	6-14	.42	6-14	.45	6-14	.67
MAXIMUMS FOR PERIOD OF RECORD																
19 63 to 19 64	6-14 1964	.27 1964	6-14 1964	.13 1964	6-14 1964	.16 1964	6-14 1964	.38 1964	6-14 1964	.40 1964	6-14 1964	.42 1964	6-14 1964	.45 1963	3-4 1963	.70
NOTES: Watershed conditions: See page 71.5-1. 1/ Precipitation: Jan. 1-Jan. 31, estimated from U. S. Weather Bureau gage at Carson, Iowa, 4 miles northeast of watershed; Feb. 1-April 2, from rain gage 101; April 3-Nov. 20, Thiessen average of seven recording rain gages; Nov. 21-Dec. 31, arithmetic average of rain gages 101 and 108. 2/ Precipitation: Jan. 1-Mar. 10 and Nov. 12-Dec. 31, arithmetic average of rain gages 101 and 108; remainder of year, Thiessen average of seven recording rain gages. 3/ Mean P based on 94-yr (1871-1954) U. S. Weather Bureau record period at Omaha, Nebr.																
1964 SELECTED RUNOFF EVENTS						TREYNOR, IOWA		WATERSHED 5								
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF									
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)						
Event of June 14, 1964																
5-15	.04	.0053	6-14	RG	101		6-14	0645	.0010	.0000						
5-16	.00	.0048		0600	.00	.00		0657	.0082	.0010						
5-17	.00	.0044		0614	.13	.03		0700	.0121	.0015						
5-18	.00	.0045		0625	.44	.11		0705	.0132	.0025						
5-19	.00	.0044		0633	.53	.18		0710	.0125	.0036						
5-20	.00	.0044		0640	1.29	.33		0712	.0840	.0052						
5-21	.00	.0039		0645	1.32	.44		0713	.244	.0080						
5-22	.14	.0036		0650	4.08	.78		0714	.273	.0123						
5-23	.30	.0053		0654	3.00	.98		0716	.255	.0211						
5-24	.00	.0049		0657	5.00	1.23		0718	.238	.0293						
5-25	.79	.0056		0703	1.30	1.36		0722	.203	.0440						
5-26	1.75	.1491		0710	.34	1.40		0728	.177	.0630						
5-27	.00	.0087		0725	.00	1.40		0733	.150	.0767						
5-28	.00	.0081		0735	.12	1.42		0740	.118	.0923						
5-29	.00	.0079		0749	.13	1.45		0751	.0857	.1110						
5-30	.00	.0078		0758	.40	1.51		0758	.0700	.1201						
5-31	.00	.0071		0818	.12	1.55		0808	.0553	.1305						
6 -1	.00	.0068		0826	.53	1.62		0816	.0441	.1372						
6 -2	.00	.0061		0836	.84	1.76		0831	.0345	.1470						
6 -3	.00	.0058		0847	.38	1.83		0850	.0282	.1570						
6 -4	.00	.0063		0855	.83	1.94		0909	.0278	.1659						
6 -5	.00	.0058		0919	.08	1.97		0914	.0345	.1685						
6 -6	.00	.0058		0953	.05	2.00		0919	.0440	.1717						
6 -7	.02	.0053		1002	.33	2.05		0922	.0484	.1740						
6 -8	.20	.0054		1012	1.20	2.25		0928	.0534	.1791						
6 -9	.00	.0048		1027	.12	2.28		0938	.0523	.1880						
6-10	.13	.0059		1032	1.20	2.38		0948	.0393	.1956						
6-11	1.96	.0472		1040	1.35	2.56		0955	.0307	.1997						
6-12	.00	.0127		1045	1.08	2.65		1003	.0279	.2036						
6-13	.36	.0222		1100	.08	2.67		1012	.0307	.2080						
6-14	.00	5/ .0027		1150	.00	2.67		1023	.0312	.2137						
				1159	.47	2.74		1036	.0309	.2204						
								1040	.0356	.2226						
								1047	.0691	.2288						
								1049	.0779	.2312						
NOTES: TO CONVERT RUNOFF IN IN/HR TO GFS, MULTIPLY BY 392.24. 4/ THIESSEN AVERAGE OF SEVEN RECORDING RAIN GAGES. 5/ RUNOFF PRIOR TO 0645.																

1964			TREYNOR, IOWA				WATERSHED 5			
ANTECEDENT CONDITIONS			RAINFALL				RUNOFF			
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY	RATE (in/hr)	ACC. (inches)
			<u>Event of June 14, 1964—Continued</u>							
							6-14	1050	.0939	.2326
								1053	.138	.2385
								1055	.151	.2433
								1059	.156	.2535
								1102	.154	.2613
			RG 102 2.56					1108	.144	.2762
			RG 103 2.51					1111	.132	.2831
			RG 104 2.45					1122	.106	.3049
			RG 105 2.66					1130	.0912	.3181
			RG 106 2.72					1140	.0706	.3316
<u>Watershed conditions:</u>										
Crop heights: Corn, 12-18 in.;										
beans, 3-9 in.; small grain,										
headed; pasture, 3-12 in.										
Percent of watershed in:										
Above Below										
terraces terraces			7 RG AVG 1/ 2.59					1146	.0558	.3379
Corn	27	3						1156	.0454	.3463
Beans	20	1						1208	.0401	.3549
Small grain	9	-						1227	.0286	.3658
Pasture	26	10						1249	.0190	.3745
Roads and								1317	.0127	.3820
farmstead	3	1						1350	.0083	.3878
Totals	85	15						1410	.0063	.3902
								1431	.0047	.3921
								1507	.0034	.3946
								1624	.0020	.3981
								1730	.0016	.4002
								1832	.0014	.4018
								1931	2/ .0013	.4032

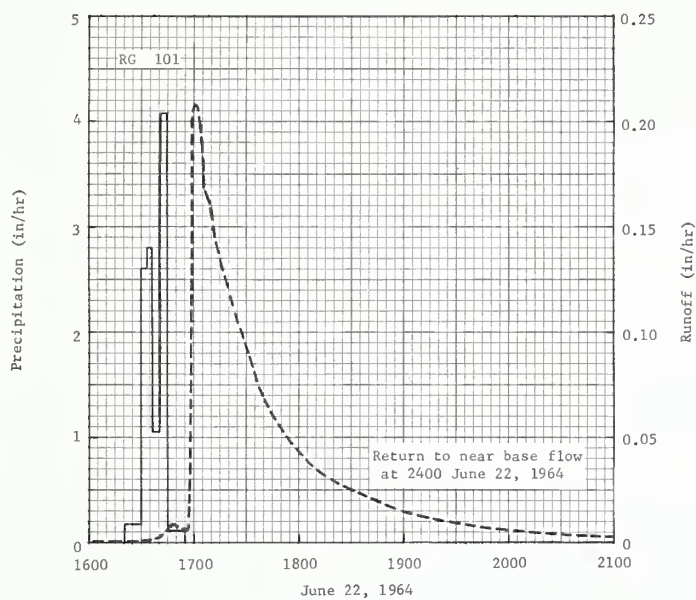
NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 392.24. 1/ THIESSEN AVERAGE OF SEVEN RECORDING RAIN GAGES.
 2/ BEGINNING OF NEXT EVENT.

SELECTED RUNOFF EVENTS			TREYNOR, IOWA			WATERSHED 5		
ANTECEDENT CONDITIONS			RAINFALL			RUNOFF		
DATE MO-DAY	RAINFALL (inches)	RUNOFF (inches)	DATE MO-DAY	TIME OF DAY	INTENSITY (in/hr)	ACC. (inches)	DATE MO-DAY	TIME OF DAY
	7 RG 1/							
6-17	.00	.0594					6-22	2013
6-18	.00	.0217						2052
6-19	.00	.0205						2133
6-20	.51	.0380						2259
6-21	.37	.0289						2400
6-22	3/ .18	4/ .0171						2/ .0015
Watershed conditions:			Event of June 22, 1964—Continued					
Crop heights: Corn, 18-24 in.;								.1494
beans, 6-12 in.; small grain,								.1520
headed; pasture, 3-12 in.								.1539
Percent of watershed in:								.1568
	Above	Below						.1585
	terraces	terraces						
Corn	27	3						
Beans	20	1						
Small grain	9	-						
Pasture	26	10						
Roads and								
farmstead	3	1						
Totals	85	15						

NOTES: TO CONVERT RUNOFF IN IN/HR TO CFS, MULTIPLY BY 392.24. 1/ THIESSEN AVERAGE OF SEVEN RECORDING RAIN GAGES. 2/ RETURN TO NEAR BASE FLOW. 3/ RAINFALL PRIOR TO 0200. 4/ RUNOFF PRIOR TO 1629.



TREYNOR, IOWA WATERSHED 5



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